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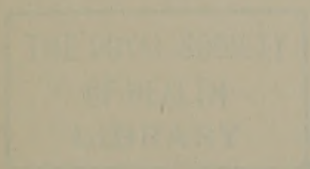
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The
Chicago-Cook County
Health Survey

THE
CHICAGO-COOK COUNTY
HEALTH SURVEY

United States Public Health Service



New York

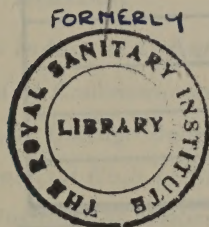
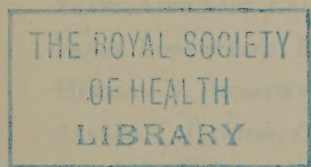
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1949

The Chicago-Cook County Health Survey

CONDUCTED BY THE

United States Public Health Service



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FOREWORD

THE UNITED STATES PUBLIC HEALTH SERVICE is proud to have had a part in the Chicago-Cook County Health Survey. The benefits that will be derived from this survey by the citizens of Chicago and Cook County will far outweigh the expenditure of time and money involved in making it. The intense community interest that initiated this comprehensive study of public health resources gives assurance that at least the major recommendations of the Public Health Service and the Advisory Committee will be put into effect at an early date.

No Public Health Program can achieve substantial success, though its supporting appropriations are large and its resources legion, unless it stems from the people who are served by the program. The fact that seven agencies contributed \$43,305, ten agencies contributed full-time personnel or space, and many other agencies contributed in lesser ways to the survey, is ample proof that in Chicago and in Cook County the people are interested in and are willing to support their public health department.

Because of its magnitude, this survey represents a landmark in the evolution of co-operative community enterprises designed to bring the benefit of preventive medical, sanitary engineering, and nursing services to every individual in the community. It was conducted in a democratic way, without compulsion, and yet at every point the recommendations, which were sometimes critical, were accorded an understanding reception. This survey undoubtedly will establish a pattern for many similar surveys in other areas of the country.

Public health, being a dynamic composite of many scientific disciplines, necessarily grows as more scientific discoveries are translated into action programs designed to prevent and ameliorate disease. Many agencies are wholly or in part engaged in public health activities. Many accepted public health procedures of yesteryear are becoming outmoded. All this makes it essential for an inventory to be taken periodically to determine whether or not community public health resources are being used in such a way as to obtain a maximum of service for the money expended.

It is hoped, and there is every reason to believe, that this stock

taking, this critical evaluation of the public health program, as it has been conducted in Chicago and Cook County, will result in improvements that will inspire public health workers to greater efforts and will insure the continuance of public support at its present high level.

THOMAS PARRAN

*Surgeon General, United States
Public Health Service*

*Washington, D.C.
December 31, 1947*

PREFACE

THE CHICAGO-COOK COUNTY HEALTH SURVEY was unique in its comprehensiveness, the size and diversity of the population included in the area surveyed, and the multiplicity and complexity of the health problems involved. As a result, the survey program was largely a pioneering effort which had to be developed *de novo*.

Throughout the years the Chicago area has been responsive to every new advance in public health practice, so that there is nothing of any significance that has not been appropriated and exploited to some degree by either official or voluntary health agencies in this territory. Without any guiding force having knowledge and authority to prescribe the bounds within which each agency should operate, it is inevitable that the organic structure of the health program should lack symmetry.

This country has just passed through a great national crisis, during which every interest had to be focused upon winning the war. The experience of this war emphasized, as nothing else has ever done, the importance of human assets both upon the production line and upon the battle front. No thoughtful person could fail to be shocked at the revelation of the Selective Service examinations which disclosed that about 40 percent of the nation's young men in their best years of life were found physically or mentally unfit for military duty, especially when it is realized that a significant portion of the incapacitating conditions was due to preventable causes. With the war successfully completed, this community must now bend its energies to the building of a more perfect health structure—one that should be proof against repetition of past weaknesses and shortcomings. The first purpose of this survey, therefore, was to make a fact-finding inventory of all the health forces in this field and to appraise the strength and weakness of their functional capacity. But strength alone is not enough. Enormous potential striking power may reside in a group of raw military recruits, but they are comparatively futile insofar as concerted action is concerned until such time as their efforts are coordinated and disciplined. The same is true with respect to heterogeneous health forces. It is hoped that the Chicago-Cook County

Health Survey has deduced a comprehensive long-range pattern for the mobilization of all health forces in this area into a task force wherein every combat element will perform its own appointed function and at the same time reinforce and strengthen every other element.

Large sums of money are being spent for health work in Chicago and Cook County. It was the duty of the Chicago-Cook County Health Survey group to interpret for the citizens of this area, insofar as possible, how nearly they were realizing the full value of their investments in health services. An attempt has also been made to determine what other investments could and should be made with such profit that to neglect them would be to incur profligate losses in both financial and human resources. The average person sees no relation between these two factors, but the conservation of health, the promotion of human efficiency, and the prevention of premature death can all be translated into increments of wealth. That is something quite apart from the sentimental attitude toward the value of human life. The life of one's son, daughter, or parent may be beyond any financial estimate to the individual, but from the community standpoint, he or she is valued only for his or her power to create or to conserve wealth and to add to the financial and cultural life of the community as a consumer of goods on one hand and, on the other, as an enricher of the cultural and spiritual life of the community.

In any community where financial resources for health work are limited, stress must be placed upon those items which will yield the greatest returns upon the investment. Before the Chicago-Cook County Health Survey was begun, letters were sent to a large number of agencies and individuals known to be interested in one or more of the various phases of health work, inviting them to express their views of some of the most urgent needs. The replies were most interesting and helpful, but, generally speaking, individual interests were stressed out of proportion to the health needs of the community as a whole. It would be desirable to see a health program developed which would give complete satisfaction to all health problems, but the limitations of possible financial resources must be kept in mind, and one must endeavor to cut his cloth accordingly. The ultimate recommendations, therefore, may not represent the ideal in all instances. The guiding principle was a sense of relative values.

What is meant by relative values deserves special consideration. The lay public tends to have a distorted view of this subject. It is

natural for the dramatic or the spectacular to weigh more heavily upon one's mind than the prosaic problems which are so familiar as to pass more or less unnoticed. A case or two of cholera would shock this community to the point of near panic, but many times this number of typhoid fever cases, whose infection is transmitted in the same way, would attract little attention. Likewise, a case of leprosy, in which the causative organism is very similar to that of tuberculosis, though much less infectious, would horrify the populace, whereas thousands of cases of tuberculosis are in our midst at all times without causing any great popular concern. The two greatest killers of all are cancer and heart disease, but relatively little is being done to combat them. The death rate alone, however, does not determine the relative value of a problem from the standpoint of the attack to be focused upon it by the health forces. The readiness with which a given problem yields to attack is often a decisive factor. Until such time as our research experts can furnish the health forces with more positive weapons with which to attack cancer and heart disease, the yield to efforts expended upon them must necessarily be limited. In the field of applied public health, therefore, the relative value of efforts expended upon cancer and heart disease at this time may be considered low in comparison with their mounting death rates, though this does not at all mean that such knowledge as we have of their prevention should not be exploited to the fullest possible extent. Another good illustration of the same principle is afforded by poliomyelitis. Even in a year of highest incidence of this disease only 1,274 persons in the Chicago-Cook County area were stricken and 113 deaths resulted from poliomyelitis, while during the same year 2,142 died of tuberculosis, 6,524 died of cancer, and 17,528 of heart disease. Despite these circumstances, poliomyelitis in the popular conception overshadows many other health problems in which health work would yield greater returns. This is because of its dramatic appeal. The situation is further complicated by the fact that we know pitifully little about how to attack the disease from a preventive standpoint. Here again a practical control program must be relatively impotent, pending the forging of more effective weapons by the research experts.

The modern trend of thought as to what should be included in a health survey far exceeds the basic conception of communicable diseases. Infant and maternal hygiene, the physical examination of school children, and industrial hygiene are familiar examples of items

generally considered to come within the purview of health department activities, though disorders in these categories are not transmissible. Although a health service may not be engaged in the actual furnishing of remedial services, such as hospital service, medical care, and rehabilitation of the handicapped, these items are concerned with the physical well-being and efficiency of the individual and as such should be investigated as to their adequacy and availability to the community as a whole. In a comprehensive appraisal of health facilities, therefore, items of this nature were included if for no other reason than the concerted demand from health and welfare agencies.

The survey was divided basically into the following three major divisions: (1) "Sanitation and Sanitary Engineering"; (2) "Preventive Medical Services"; (3) "Hospitals, Clinics, and Medical Care."

Each of these divisions has been broken down further into component subdivisions. Fitting together the several divisions of the report was closely analogous to making a map in which each member is constructed on the same dimensional scale. A map of the United States, for instance, shows the size and shape of each state in exact proportion to each of the other forty-seven. Deviation from this principle would result in misfits and monstrosity. While there was no exact scale to guide the construction of the report, seasoned judgment endeavored to supply this need with the hope that the Rhode Island of the report would not appear as large as Texas.

Although the coverage of the Chicago-Cook County Health Survey was complete, the depth of the probe necessarily was limited. It would have been physically impossible within the time allotted to make an exhaustive study of any branch of health service in such a great metropolitan area. The most that could be attempted was a definitive study of a representative and statistically significant sample in each instance. In substance, the objective of the Chicago-Cook County Health Survey was a qualitative rather than a quantitative analysis.

A large mass of statistical material is involved in the presentation of the findings. Wherever practicable, statistics were derived from the Federal Bureau of the Census, which are presumed to be reasonably reliable. For the most part, however, statistics from local sources had to be employed. The Chicago-Cook County Health Survey could not attempt to verify all records by tracing them to their original sources. Discrepancies will be found between local records and those from

state and Federal sources. The Chicago-Cook County Health Survey did not attempt to reconcile these differences. Where local records were used, they can be accepted at face value only.

The United States Public Health Service, through the Director of the Chicago-Cook County Health Survey, assumed the leadership in and the responsibility for the findings and recommendations. In surveys of this character, however, questions of administration and public policy arise in which a high degree of reliance must be placed upon the local representative civic groups. For this reason the Advisory Committee of the Chicago-Cook County Health Survey, appointed by the mayor of Chicago and the president of the Cook County Board of Commissioners, was set up to share responsibility in such matters. The activity of this citizen group strengthened the survey immeasurably by formulating policies and programs, providing supplementary personnel, critically reviewing all reports, and amassing funds required to meet local expenditures. The members of this committee are: Frank Annunzio, Chicago Industrial Union Council, CIO; Frank Bobrytzke, Board of Commissioners of Cook County; Herman N. Bundesen, M.D., Chicago Board of Health; Alfred T. Carton, Commercial Club of Chicago; Vernon C. David, M.D., Institute of Medicine of Chicago; Fred K. Hoehler, Community Fund of Chicago, Inc.; Jesse A. Jacobs, Chicago Association of Commerce; Anton Johannsen, Chicago Federation of Labor; C. W. Klassen, Illinois Department of Public Health; Frank D. Loomis, Chicago Community Trust; Leo M. Lyons, Chicago Hospital Council; William F. Petersen, M.D., Chicago Medical Society, vice-chairman; H. J. Shaughnessy, Ph.D., Illinois Department of Public Health; Samuel A. Goldsmith, Council of Social Agencies of Chicago, chairman; and Alexander Ropchan, secretary.

It was also urged by the director of the survey that local technical talent should be enlisted to the greatest possible extent. For this reason technical consultant committees were appointed by the chairman of the Advisory Committee to collaborate with the chiefs of the several major branches of the survey. These committees assisted in setting up the specific plans for the survey program, and their counsel was invaluable in the guidance of the survey and in the interpretation of its findings. The recommendations, therefore, do not represent solely the opinions of the United States Public Health Service, but rather the judgment of a group of recognized local experts together with that of the United States Public Health Service personnel. The

members of the technical consultant committees named in connection with each of the major subdivisions of the Chicago-Cook County Health Survey are such as to command the profoundest respect among those having an intimate acquaintance with problems in any of the specialized fields of health activity in the Chicago area.

Looking upon Chicago and Cook County as a doctor would upon a patient, the Chicago-Cook County Health Survey staff first attempted an accurate diagnosis of the disease, if any, affecting each member of the public health body in this area; then they provided a prescription based solely upon the diagnostic findings, according to the best judgment and ability, for the relief or cure of the defective conditions. The prognosis will then depend upon the fidelity with which the prescription is followed. It should be emphasized, however, that both diagnosis and prescription were governed wholly by the evidence obtained, which in turn was collected and weighed honestly and impartially to the best ability of the survey group and its consultants.

In approaching these problems, one must be a frank realist. Many, if not all, of the agencies surveyed will be displeased with some one or more phases of the survey's findings and recommendations. Through the newspaper columns and other channels of expression, more or less violent disagreement with certain items of the report may be expected from persons or agencies whose interests may be challenged. Criticisms will be heartily welcomed, provided they are honest, fair, constructive, and free from rancor. The staff of the Chicago-Cook County Health Survey claims only sincerity of purpose, not infallibility of either knowledge or judgment.

In the course of the survey a multitude of defects in the health structures of the Chicago-Cook County area were readily discernible. It is comparatively easy to find fault, but just as the authors of this report welcome constructive criticism of its recommendations, so the people of this community have a right to expect that the criticisms contained in this report shall be reasonable and constructive. Moreover, there is no profit in pointing out errors for which no known remedies exist.

In an effort to arrive at a balanced and comprehensive plan for future development of health activities in this area, it is hoped that the report of the Chicago-Cook County Health Survey will be viewed objectively and that local differences may be set aside. Certainly insofar as the workers engaged in the Chicago-Cook County Health

Survey are concerned, personalities and partisanship in any form were disregarded completely. The one and only unit of measurement was the health need of the human being and the community of which he is a part, regardless of politics, religion, race, or any other consideration.

The report which follows will not represent a perfect formula for health administration in this area, but will afford a guide, which, if followed, will yield a service such as Chicago and Cook County have a right to expect—a service based solely upon merit. The building of such a health service is ridiculously simple. While sufficient money is an essential item, expenditures alone will not purchase the desired results, but on the contrary, if improperly employed, may purchase only a whirlwind of corruption and incompetence. The problem boils down to one simple factor—personnel, honestly selected, adequately trained, and endowed with proper authority to act, or, in other words, a sound personnel policy. No program so equipped can fail to succeed. The whole question is whether Chicago and Cook County are willing to subscribe to such a program. In some instances personnel policies must be changed radically in spirit as well as in form if anything worth while is to be accomplished. Needed reforms, however, will not come about by mere concurrence in the recommendations presented in the Chicago-Cook County Health Survey report, nor can results be expected by the waving of a wand. Generally speaking, achievements will result from evolution rather than revolution, but in any event, the price of success will be good sense, persistent effort, a co-operative spirit, and adequate financial support.

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Part I

ENVIRONMENTAL
SANITATION

THE CHICAGO-COOK COUNTY AREA

by *Ralph E. Tarbett*

PUBLIC HEALTH WORK may be divided into two main activities. One deals with control of the individual insofar as the spreading of disease is concerned and is the function of the medical officer and the public health nurse. The other is concerned with the control of the environment as it may be a factor in the spread of the disease and is a function of the public health or sanitary engineer. The second activity is referred to usually as "environmental sanitation."

In general, those environmental conditions which may affect health and welfare are brought about by the individuals of the community and may become complicated as the size of the community increases. In rural areas practically all environmental conditions affecting health and welfare are ordinarily considered the function of the health department. In the larger communities, however, control of these health activities is, in many instances, the responsibility of more than one department. When control is not vested in the health department, this agency must at least be interested in the operation of these services in which questions of health are involved and should keep a complete check on operations to ensure the protection of public health.

Phases of environmental sanitation in which health departments are officially interested include water supplies, both public and private; disposal of human feces and waste water (sewage); collection and disposal of municipal refuse, especially garbage; housing (with respect to the occupied dwelling or building); sanitary control over the protection, handling, processing, and delivering of fluid milk, milk products, and frozen desserts; storing, handling, preparation, and serving of foods and drinks; preparation and sale of foods and drugs; industrial sanitation as it applies to the health safeguards provided in industrial plants; atmospheric pollution with respect to smoke abatement; industrial liquid waste disposal as it effects pollution of streams; recreational sanitation as it affects all sanitation in

recreational areas, including pools and bathing places; insect control, including mosquitoes and flies; rodent control; and rural sanitation dealing with all sanitary problems in the unincorporated areas.

CHICAGO-COOK COUNTY HEALTH SURVEY—1946

The survey of sanitation activities in Chicago and Cook County was concerned primarily with the existing situation. Accordingly, investigations were made by sanitary engineers of the sanitary conditions and programs in Chicago and in each of the eighty-nine municipalities of the county. City officials on all levels were conferred with, ordinances were reviewed, budgets were obtained and analyzed, and a check of sanitary inspections were made wherever it was deemed advisable. Field survey operations were co-ordinated with information in the files of the Illinois Department of Public Health, the Cook County Department of Public Health, the Chicago Health Department, and the Chicago Department of Public Works. In brief, every possible source of available information relative to sanitary conditions in the county was reviewed.

Surveys of the rural area followed the same general pattern although the absence of sanitation services made this phase of the investigation much simpler.

The findings of the city and county surveys and the recommendations suggested are presented in succeeding chapters for the following general divisions of service:

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| Water supplies | Sanitary inspection services |
| Sewerage—sewage disposal and stream pollution | Rat infestation and rodent control |
| Refuse collection and disposal | Swimming pool sanitation |
| Sanitation of food production, processing, and disposal | Smoke abatement |
| Mosquito control | Public health laboratory facilities |
| | Housing |

GENERAL DESCRIPTION OF AREA

Since environmental sanitation by its very definition is concerned with the environment in which people live, it is essential that a comprehensive view of the natural or artificial factors influencing the area be attained.

Characteristic of the broad central plain of which it is a part, the topography of Cook County is flat and low. At one point near Summit, Illinois, the divide between the Des Plaines River and the Chi-

Chicago River drainage areas is only a few feet above the level of Lake Michigan. The low marshy area that exists in much of the county would, therefore, be unsuited to the development of a great metropolitan area were it not for its strategic location at the base of Lake Michigan and at the divide between the two great drainage systems of the Mississippi and the St. Lawrence rivers.

The elevation of the area ranges from 590 to 700 feet above sea level with the level of Lake Michigan about 580. The higher elevations are generally found in specific regions, primarily because of the presence of moraines resulting from the receding ice of the last glacial period.

The drainage pattern of the county is unlike the patterns generally created by normal valley development. The existing alternating ridges and low areas have caused the development of a system of streams generally parallel to the north-south axis of Lake Michigan. Thus, the Chicago River and its several branches extend into northern Cook County, the Des Plaines River flows in a southerly direction near the west boundary of the county and drains much of the southern part of the county, and the Du Page and Fox rivers, farther west, drain parts of northwestern Cook County.

HISTORY OF ENVIRONMENTAL SANITATION SERVICES

The creation of the Board of Sewage Commissioners in 1855 and the Board of Public Works in 1861 marked the beginning of the provision of environmental sanitation services for the citizens of Chicago. Environmental sanitation services in Chicago thus preceded the establishment of a city health department, on July 19, 1876.

The history of environmental sanitation services in Cook County outside Chicago is closely associated with the history of the Illinois Department of Public Health. In 1877 the first board of health was authorized and organized, and in 1879 it enacted laws on municipal sewage disposal and the sale of adulterated or unsanitary milk. In 1914 a bureau of sanitary engineering was organized; it was reorganized in 1917 as the existing Division of Sanitary Engineering.

Services relating to inspection of public water supplies, sewerage systems, stream pollution, milk pasteurization plants and farms producing Grade A milk, swimming pools, and tourist and trailer camps are normal operating functions of the Division of Sanitary Engineering, provided from division headquarters in Springfield, Illinois.

Although the Cities and Villages Act of 1872 opened the way for

adequate health services on a municipal basis, few municipalities in Cook County took any significant action. Evanston, Oak Park, Cicero, Berwyn, and Winnetka at various times during the period from 1872 to 1936 organized boards of health to act under the statutory laws granted by the state. Sanitation activities provided at one time or another were concerned primarily with the inspection of eating places, the control of milk, and the abatement of general insanitary conditions.

Special creations of the state legislature in the form of sanitary districts, mosquito abatement districts, and drainage districts, plus the usual operating agencies of the municipalities, were responsible for providing the basic sanitary requirements of community life. Of special significance was the Sanitary District of Chicago (see Chapters V to VIII on Sewerage, Sewage Disposal, and Stream Pollution).

The passage of the Social Security Act, in 1936, by the Congress of the United States, and the funds made available through that act stimulated greatly the development of local sanitation service. Twenty district health units were organized throughout Illinois. District Health Unit No. 1 comprised the counties of Cook, Will, and Du Page. The services rendered in the field of sanitation were basically those noted above as normal functions of the division of sanitary engineering. In 1945 the Cook County Department of Public Health was officially organized. From the foregoing it can be seen that the sanitation services in Cook County exclusive of Chicago are entering upon a developmental period.

CHICAGO WATER SUPPLY

by *Ralph E. Tarbett*

THE BASIC ELEMENT necessary for the establishment and maintenance of a metropolitan region such as Chicago and its surrounding area is a water supply safe for drinking and adequate in quantity. Without Lake Michigan, the city of Chicago as it now exists would not be possible. Since water is such a basic commodity, it has become a normal function of government to provide and exercise supervision over water supplies consumed by the public in order to safeguard the public health.

SCOPE OF GOVERNMENTAL FUNCTIONS

Few persons realize how many controls have to be taken to ensure an adequate and safe water supply as it is drawn from the tap. The United States Public Health Service standards for drinking water used on interstate carriers, which have been adopted generally as the standards of purity for drinking water, define a water-supply system as extending from the source to the free-flowing tap.¹ To ensure the safety of the water as drawn from the tap generally requires activity in more than one official agency. The securing, processing, pumping, and distributing of water to the individual premises is a function of the water department (in Chicago, the Department of Public Works). Generally, but not always, the authority of the water department ceases at the property line. From that point to the free-flowing tap, other city agencies assume the responsibility for prevention of contamination of the water.

Thus, the plumbing inspection services in building, health, or other departments review plans and inspect piping systems in new buildings to prevent possible contamination of the water supply. In addition, control over public water supplies is exercised by state departments of health by requiring approval of the source of a water

¹ U. S. Public Health Service, "Public Health Service Drinking Water Standards," *Public Health Reports*, LXI (Mar. 15, 1946), 371-384; Reprint No. 2,697.

supply, plans for construction of a plant, inspection from time to time of treatment plants, and routine collection and examination of samples from the distribution system. Approval of plans is the only instance of direct control by state departments of health. Otherwise, they act in an advisory capacity, except in an outbreak of disease, when more direct control may be assumed.

City health departments have no direct connection with the operation of the water works. Their activities are confined generally to collection of water samples from the distribution system for laboratory examination. Thus, they are kept informed at all times as to the safety of the water delivered to the consumer and are able to take whatever action is necessary to protect the public health if dangerous impurities are discovered in the samples analysed. Information obtained from the examination of water samples also permits a health department to maintain a check on the control activities of the water department.

Well-organized city health departments maintain close liaison with the operating division of the water department and particularly with that division in charge of the treatment of water. Well-organized staffs of county and district health departments may be designated by the state health department to act for it in its control and supervision over public water supplies in the county or the district.

DRINKING WATER STANDARDS

The safety of a water supply as it is actually produced does not indicate an absolute term, but merely a relative and quantitative value. Thus, to say that a water supply is "safe" does not necessarily signify that absolutely no risk is ever incurred in drinking it. What is usually meant by a "safe" water supply is that the danger, if any, is so small that it cannot be discovered by readily available means of observation.

The drinking water standards formulated by the United States Public Health Service are based upon such a definition of a safe water supply as a guide for judging the safety of water supplies used for drinking purposes. The standards consist of three sections: (1) as to source and protection; (2) as to bacteriological quality; (3) as to physical and chemical characteristics.

The standards as to source and protection provide in part that, "The water supply shall be: (a) obtained from a source free from pollution; or (b) obtained from a source adequately purified by

natural agencies; or (c) adequately protected by artificial treatment." The section further provides that the water supply system in all its parts shall be free from sanitary defects and health hazards.

The standards as to "bacteriological quality" require that a minimum number of samples of water for bacteriological analysis be collected at representative points throughout the distribution system each month; that the laboratory follow the *Standard Methods for the Examination of Water and Sewage*, published by the American Public Health Association and the American Water Works Association; and that the presence of organisms of the coliform group not exceed the amounts stated in the standards.

Organisms of the coliform group which exist in the intestinal tracts of warm-blooded animals and humans are used as the test organisms when water is examined bacteriologically. The presence of these organisms (in numbers greater than the standards allow) indicates that the water is contaminated. Consequently there is no assurance that typhoid fever or other bacteria causing water-borne illness are not also present or that such disease-causing organisms cannot gain entrance to the water supply.

The standards "as to physical and chemical characteristics" indicate limits for turbidity and color in water supplies and provide further that the water shall have no objectionable taste or odor. The presence of lead, fluoride, arsenic, selenium, or hexavalent chromium in amounts greater than the allowable limits constitute grounds for rejection of the water supply. Preferable amounts of chemicals such as iron, copper, magnesium, zinc, and others are also indicated.

WATER-SUPPLY SYSTEMS AND PROCESSES

Water supplies are available from two sources: ground water and surface water.

Ground water, as the name implies, indicates that the water is available in the ground. Such water is found in the ground as a result of natural processes. When rain falls or snow melts, water seeps into the ground at a rate depending upon the amount of rain or snow available, the dryness of the ground, the character of the soil, and other factors. Water seeps downward through the soil until eventually the space between the ground particles is filled with water. This level is called the ground water table. In the process of flowing downward, the soil through which the water flows acts as a filter and

tends to eliminate disease-causing bacteria from the water. Thus, water existing in the ground after being filtered through a sufficient depth of tight, clean soil is normally safe for drinking. In some regions, including the Chicago region, the geological formations consist in part of a limestone bedrock which is cracked and creviced, and which contains solution channels through which water can pass readily. Such rock allows ground water to travel for long distances without providing any filtering medium, thus allowing contamination to travel along with the water. Where water is taken from such rock formations, special precautions must be maintained in order to provide a water safe for drinking.

Since water is one of the best solvents known, it is not surprising that ground water should dissolve and carry with it minerals that appear in the various formations through which it flows. Practically all ground waters contain measurable quantities of silica, calcium, magnesium, sodium, potassium, bicarbonate, sulfate, and chlorides. Hard water, objectionable for laundry and washing purposes and for industrial uses, is due to the presence of calcium and magnesium bicarbonates and sulfates. In the Chicago area hardness is caused primarily by the presence of calcium and magnesium bicarbonates. Many municipalities, private home owners, commercial establishments, and industries maintain treatment facilities to reduce this hardness in order to have a soft water available for use.

Surface water is water that is supplied from lakes, rivers, ponds, or other surface-catchment areas. Such waters, which originate in rainfall, flow over the ground surface to rivers or lakes and partake of the material over which they flow. By the time the waters reach the lake or the river, they contain large quantities of foreign material, including bacteria which make such waters generally unsatisfactory for drinking. In addition, lakes or streams, especially in the vicinity of large populations, may be polluted by sewage or industrial wastes which further restrict their use as a water supply.

Except for a certain few areas which maintain complete control over the drainage basin from which water is taken, surface water supplies usually must be subjected to a purification process before the water can be utilized for drinking purposes. Treatment facilities ordinarily provided include coagulation, sedimentation, filtration, and chlorination.

Coagulation means the addition of chemicals such as lime and aluminum sulfate (alum) which form a flocculent precipitate upon

being added to the water. The water is then stirred by mechanical mixers in order to assist the chemicals in forming a good precipitate, or "floc" as it is known technically, and to ensure good mixing. The chemically treated water is then allowed to pass through basins at a low velocity for a four-to-six-hour period during which the precipitate settles to the bottom of the basin. This portion of the treatment is termed sedimentation. During its downward course, the gelatinous precipitate carries with it most of the suspended matter in the water and a large portion of the bacteria.

Filtration means that settled water is allowed to flow onto sand filters consisting of approximately 24–30 inches of sand supported by 12–18 inches of graded gravel. Filtration removes the remainder of the suspended matter remaining in the water after sedimentation and completes the removal of more than 99 percent of the bacteria present in the water. After the water passes through the filters it is treated by chlorine in order to kill the remaining bacteria. Chlorine may also be added before filtration.

THE CHICAGO WATER WORKS

The City of Chicago Water Works supplies approximately one billion gallons of water per day to 3,520,000 persons within its area of approximately 214 square miles and to an additional 420,000 persons in forty suburban communities, with a combined area of 110 square miles. There are 420,357 service connections, of which 305,381, or 72.6 percent, are not metered. In 1945 the daily per-capita consumption, the average number of gallons per day to each inhabitant in the city, equaled 262.8 gallons.

Water is obtained from Lake Michigan through five lake intakes and cribs located along and at varying distances from the lake shore and is transmitted through a system of tunnels totaling 65 miles in length and varying in size from 5 feet to 16 feet in diameter. The water flows by gravity through the intakes and tunnels to twelve pumping stations with a total installed capacity of 2,288 million gallons per day. From these stations the water is pumped into the distribution system, which consists of 3,894 miles of mains 4 inches to 54 inches in diameter. The water pressure in the system, which is maintained by direct pump pressure, ranges from 25 to 50 pounds per square inch. The cost of this system to date totals approximately \$200,000,000.

The water-supply system is divided into three districts, known as

the North District, the Central District, and the South District, because of the relative locations of the water intakes. Chlorination is the only treatment given to the water supply of the North and the Central districts, which comprises 66 percent of the total supply. Since October 7, 1945, the South District Filtration Plant, not yet completed, has provided coagulation and sedimentation, in addition to chlorination.

DEVELOPMENT OF THE CHICAGO WATER WORKS In 1842 the Chicago Hydraulic Company owned and operated the first water works in the city of Chicago, which then had a population of 4,500. The intake extended 150 feet into the lake off Lake Street, and the pumping station was located at Lake Street and Michigan Avenue. This works served only a portion of the city south and east of the river. Other sections in the city obtained their water from the river or the lake or from wells.

When the rapidly increasing population reached 35,000, in 1851, the city obtained permission from the legislature to build and operate its own water-works system. The first municipally owned water works was located on the lake front at Chicago Avenue and was placed in operation in February, 1854. This system consisted of an intake 600 feet from shore, an 8-million-gallons-per-day pump, 9 miles of cast-iron pipe, standpipe, and iron reservoir. In 1857 an additional pump of 12-million-gallons-per-day capacity was installed.

Because the city sewers, along with other polluting wastes, discharged into the river and the lake, gross pollution of the public water supply resulted. It was evident that an intake farther out in the lake or a water treatment plant was needed to curtail the alarming prevalence of typhoid fever, dysentery, and other water-borne diseases. The Chicago Board of Public Works proposed an intake two miles off shore at Chicago Avenue with a tunnel under the lake and a new and larger pumping station and water tower. This proposed works, started in March, 1864, and put into operation on July 20, 1867, marked the beginning of the present Chicago Water Works. The completion of this project (the present Chicago Avenue Pumping Station) brought temporary relief from water-borne diseases, but with continued growth of the city, the disposal of sewage and industrial waste into the lake and the Chicago River again polluted the supply.

The second pumping station, supplied by the same two-mile crib intake, was constructed at Twenty-second Street and Ashland Avenue

and placed in service in 1876. Harrison Street and Fourteenth Street pumping stations were supplied by a new four-mile crib constructed in 1892. However, during times of heavy rain storms, even the Four-Mile Crib Intake off Twelfth Street was affected by the polluted Chicago River.

The opening of the main drainage channel in 1900 by the Sanitary District of Chicago, plus the completion of the south and the north side intercepting sewer system, each of which is discussed in another section, removed for the most part serious pollution from the public water supply. The construction and placing in operation of the Sixty-eighth Street, C. H. Harrison, E. F. Dunne, Wilson Avenue, and W. E. Dever crib-water intakes in the years 1894, 1900, 1911, 1918, and 1935, respectively, at distances from shore varying from 10,525 to 13,830 feet, served to supply the water works with a raw water of better and more uniform quality.

The continued growth, expansion, and capacity of the system is shown in Table 1.

TABLE 1. GROWTH OF CHICAGO WATER WORKS, 1854-1946

| <i>Year</i> | <i>Population Using Water</i> | <i>Average Daily Pumpage (In gallons)</i> | <i>Rated Capacity of Pumps (Million gallons per day)</i> | <i>Length of Pipe (In miles)</i> |
|-------------|-----------------------------------|---|--|--------------------------------------|
| 1854 | 65,000 | 591,000 | 8 | 30 |
| 1860 | 109,000 | 4,704,000 | 20 | 91 |
| 1870 | 307,000 | 21,766,000 | 35 | 272 |
| 1880 | 503,000 | 57,384,000 | 96 | 455 |
| 1890 | 1,107,000 | 152,372,000 | 229 | 1,205 |
| 1900 | 1,727,560 | 322,683,000 | 331 | 1,872 |
| 1910 | 2,214,280 | 518,579,000 | 635 | 2,272 |
| 1920 | 2,905,850 | 773,100,000 | 1,147 | 2,941 |
| 1930 | 3,683,565 | 1,059,441,100 | 1,834 | 3,642 |
| 1940 | 3,761,360 | 963,775,960 | 2,309 | 3,837 |
| 1946 | 3,940,000 | 963,720,000 | 2,288 | 3,894 |

TREATMENT OF THE WATER SUPPLY From March, 1912, when the chlorination of Chicago's water supply was begun, to 1915 an attempt was made by the city to chlorinate part of the public water supply by the application of hypochlorite solution at the Dunne, Sixty-eighth Street, and Lake View cribs. Early reports indicated that this process, although very crude, did aid somewhat in reducing the dysentery and typhoid fever rates in the city. During the years 1915 and 1916 liquid chlorine application equipment was installed at all pumping stations, and after December, 1916, the entire supply received chlorine treatment. At that time the Chicago Health Depart-

ment assumed control over chlorination in order to regulate the chlorine dosage and to note lake pollution conditions. In 1921 a Bureau of Water Safety and Typhoid Control, created in the health department, was given control over chlorination and lake-front inspection and pollution.

Following the typhoid fever outbreak on the south side of the city in 1923, city officials realized the urgent need for a rigid system of chlorination control and application directed by technical personnel familiar with water treatment processes and water sanitation practices. The city council, in January, 1924, authorized the employment of a sanitary engineer. Modern chlorination equipment and accessories were installed at each pumping station, and chlorine attendants were employed to operate the equipment, make control tests, and keep hourly records of chlorine operation. In February, 1926, the council transferred the water safety control section to the Bureau of Engineering, Department of Public Works. The laboratory examination of the water was continued, however, by the health department, and reports were made to the Bureau of Engineering.

Although the design of the chlorinating plants is being improved continually, and operation and control practices are changed with the growth of the system to conform to recommended practices of the United States Public Health Service and the American Water Works Association, the system of chlorination operation and control in Chicago is basically the same as that established two decades ago. The system used in the South District provides the one exception. An ammonia-chlorine treatment plant for the South District was not placed in operation at the E. F. Dunne Crib until July 31, 1936. This plant was built to serve, pending the completion of the proposed filtration plant, as a temporary safeguard in providing greater efficiency of treatment of the South District supply and to reduce taste and odors caused by industrial wastes in the treated drinking water. Treatment at the crib plant also served to give additional public health protection following the reduced water diversion schedule of the sanitary district effective December 31, 1938. Effective chlorination treatment control and supervision were maintained over the water supply of the E. F. Dunne Crib Water Treatment Plant on a 24-hour schedule. This control system continued until October, 1945. At that time the South District Filtration Plant began continuous operation of its coagulation, settling, and chlorination processes.

The development, design, and construction of the South District Filtration Project covers a period of approximately twenty years, beginning with the construction of an experimental filtration plant in 1926 for the purpose of establishing design values and optimum treatment processes for the proposed large filtration plants to be built. The alarming degree of pollution of the raw water supply at the southern intakes was no doubt the greatest motivating force in launching this filtration program. Completion of the South District Filtration Plant is expected in 1947. This plant will give complete filtration treatment to the South District supply which serves a third of the population.

PRESENT WATER WORKS SYSTEM

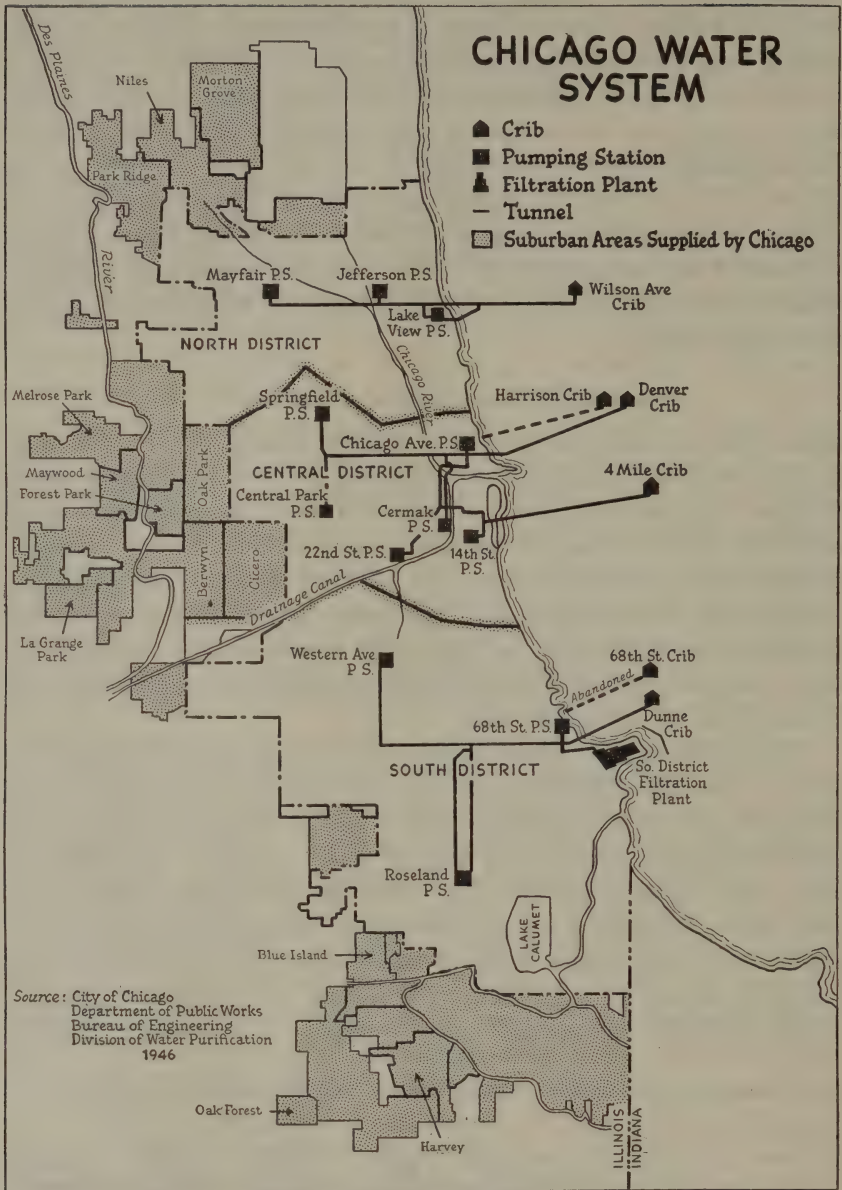
Figure 1 shows the Chicago Water-Supply System, as of 1946, with the crib intakes, tunnel system, pumping stations, and three water districts. The water-distribution system of the three districts is interconnected, and, because of variable local demands, there is no permanently fixed line of demarcation between districts and pumping-station areas. Nevertheless, each pumping station does serve certain specified areas established by controlled operation and feeder-main-valve manipulations, and therefore in this report the water works will be described on a district basis.

NORTH DISTRICT This district serves a total population of 930,000, of whom 895,000 live in the city and 35,000 in the suburbs, and it has 111,404 water accounts. The Wilson Avenue Crib, located 11,000 feet from shore in 35 feet of water, supplies raw water to Lake View, Thomas Jefferson, and Mayfair pumping stations. The water is chlorinated on the suction side of the pumps at each pumping station and pumped directly into the distribution system. The rate of pumpage is regulated to conform to established pressure curves. In 1945 the average daily pumpage of the three stations

TABLE 2. CHICAGO WATER-WORKS SYSTEM—NORTH DISTRICT

| <i>Pumping Station</i> | <i>Type of Power</i> | <i>Rated Pumpage (In millions of gallons per day)</i> | <i>Rated Chlorine Delivery (In pounds per day)</i> | <i>1945</i> | <i>Average Chlorine Dosage (In pounds per million gallons)</i> | <i>Residual Chlorine (In pounds per million gallons)</i> |
|----------------------------|--------------------------|---|--|---|--|--|
| | | | | <i>Average Daily Pumpage (In millions of gallons per day)</i> | | |
| Mayfair | Steam | 255 | 1,800 | 87.23 | 6.14 | 4.2 |
| Thomas Jefferson | Electric | 160 | 1,200 | 81.25 | 6.10 | 5.0 |
| Lake View | Steam | 100 | 1,200 | 19.73 | 6.44 | 3.6 |
| All stations | | 515 | 4,200 | 188.21 | 6.15 | 4.3 |

FIGURE I



supplying this district, which has an area of 52 square miles, was 188.21 million gallons, or 20 percent of the total city pumpage.

Table 2 presents statistics for the three pumping stations in the North District.

Water Treatment.—The average chlorine dosage applied was

6.15 pounds per million gallons of water, leaving a residual chlorine in the water pumped from the stations of 4.3 pounds per million gallons, or approximately 0.5 part per million. Residual chlorine is the amount of chlorine remaining in the water to act as the germicidal agent after the initial chlorine demand is satisfied upon the application of the chlorine dosage.

Six chlorinators installed at Mayfair Pumping Station, four at Thomas Jefferson, and four at Lake View provide continuous treatment of the raw water supply. In chlorination supervision and control, efforts are made to maintain chlorine residual of at least 3 pounds per million gallons in the water at the pump discharge. However, during periods of abnormal chlorine absorption by the water and departures from correct operation, when recommended chlorine dosages are not properly applied, residual chlorine values fall below this value for short periods.

To apply the prescribed dosage to the water supply at the Mayfair and the Jefferson pumping stations, not less than two chlorinators are operated continuously. At Lake View Pumping Station, however, present equipment lay-out necessitates the operation of only one chlorinator when pumping from only one suction well. It is understood that the city is now preparing to provide additional chlorinating equipment at this station, in order to maintain a minimum of two chlorinators in continuous service under all operating conditions.

The manual of recommended sanitation practice, prepared by the United States Public Health Service, states that chlorination equipment should have a maximum capacity at least 50 percent greater than the highest expected dosage to be applied at any time. Using this criterion, the equipment capacity of the three stations falls short in maximum chlorine dosage capacity requirements.

TABLE 3. CHLORINATION CAPACITY—NORTH DISTRICT

| STATION | PUMPAGE RATES | | MAXIMUM DOSAGE USING ALL CHLORINATION EQUIPMENT (In pounds per million gallons) | | MAXIMUM DOSAGE RECOM- MENDED BY USPHS (In pounds per million gallons) | DOSAGE DEFICIENCY (In pounds per million gallons) |
|-----------|--|---|--|--------------------------------------|---|---|
| | Maximum Day (In millions of gallons per day) | Maximum Rate (In millions of gallons per day) for 1 hour or more) | (With maximum day pumpage) | (With maximum rate pumpage) | | |
| | | | | | | |
| | | | | | | |
| Mayfair | 115.24 | 157 | 15.6 | 11.5 | 18.0 | 6.5 |
| Jefferson | 93.20 | 102 | 12.9 | 11.8 | 18.0 | 6.2 |
| Lake View | 45.07 | 86 | 26.7 | 14.0 | 18.0 | 4.0 |

Table 3 was prepared to illustrate this condition, using 1945 pumpage rates.

Bacteriological Quality of Raw Water.—The water supply of the North District, obtained from the Wilson Avenue Crib, has been accepted generally by the citizens of Chicago as a good supply. The attention of the public for the most part has been focused on the inferior quality of the water supply at the southern intakes. However, a review of bacteriological records prepared by the city indicate that there have been many periods when contamination of the Wilson Avenue Crib raw water was of such intensity as to make it a potentially dangerous and unsafe supply, with simple chlorination as the only treatment administered.

Studies of water treatment by the United States Public Health Service have shown that when the coliform bacterial content of a water exceeds an average of 50 per 100 milliliters in any one month, chlorine treatment alone is not sufficient to ensure a safe water at all times. Coliform organisms serve as an index of pollution in determining water quality and are reported in bacteriological examinations as the number present in a given volume of water.

The frequency of occurrence of coliform organisms in the raw water (untreated) in excess of 50 per 100 milliliters, the number of months the monthly average exceeded 50, and peak values for the past six-year period 1940-45 are given in Table 4.

TABLE 4. BACTERIOLOGICAL QUALITY OF RAW WATER—NORTH DISTRICT

| Year | Yearly Average Coliform (Per 100 milliliters) | Number of Days Coliform Exceeded 50 per 100 Milliliters | Number of Months Monthly Average Coliforms per 100 Milliliters Exceeded 50 | Number of Days Indices Exceeded 1,000 per 100 Milliliters |
|------|--|--|--|--|
| 1940 | 46.6 | 12 | 2 | 2 (2,400) |
| 1941 | 21.7 | 14 | 1 | 1 (2,400) |
| 1942 | 56.3 | 21 | 4 | 5 (2,400) 1 (30,000) |
| 1943 | 21.6 | 11 | 2 | 2 (2,400) 1 (3,500) |
| 1944 | 43.6 | 15 | 3 | 1 (1,300) 1 (5,400) 1 (13,000) 1 (16,000) |
| 1945 | 18.4 | 36 | 1 | 1 (1,118) 1 (11,568) |

Bacteriological Quality of Treated Water.—In 1945, 1,679 bacteriological samples of chlorinated water were collected at the three pumping stations for examination. The yearly average number of

coliform organisms per 100 milliliters of these samples was 0.26. Of the 1,679 samples examined, 116 tested positive for coliform organisms. Samples collected in the distribution system numbered 1,056 and had, upon examination, a yearly average of 0.29 coliform organisms per 100 milliliters.

Although these positive coliform organism values were reported for the chlorinated water supply, this water still met the United States Public Health Service standards as to bacteriological quality.

Turbidity.—The maximum daily average turbidity of the water on the Wilson Avenue supply during the past six-year period has ranged from 25.3 to 47.3, and the percent of the time that the turbidity exceeded 10 on all cribs ranged from 2.5 percent to 18.3 percent. The *Public Health Service Drinking Water Standards* state that "The turbidity of the water shall not exceed 10." The values for each year are shown in Table 5.

TABLE 5. TURBIDITY IN UNITS—NORTH DISTRICT

| YEAR | WILSON AVENUE CRIB | | ALL CRIBS |
|------|---------------------------------|--|---|
| | <i>Yearly Average Turbidity</i> | <i>Maximum Daily Average Turbidity</i> | <i>Percent Time Turbidity Exceeded 10</i> |
| 1940 | 5.4 | 33.3 | 12.8 |
| 1941 | 6.9 | 45.0 | 18.3 |
| 1942 | 2.5 | 47.3 | 6.2 |
| 1943 | 5.1 | 30.0 | 12.6 |
| 1944 | 4.0 | 25.3 | 7.6 |
| 1945 | 2.2 | 30.0 | 2.5 |

Turbidity in the supply interferes with the effectiveness of the chlorination treatment. When turbidity is high, there is always danger that pathogenic bacteria will escape destruction. Because the turbidity exceeds 10, at times, this supply does not meet the United States Public Health Service standards for filtered water.

Taste and Odor Periods.—Fishy and grassy tastes and odors, caused by plankton organisms which grow in Lake Michigan, occur in the North District supply during the summer months. In 1945 the plankton organisms reached an all-time high with an annual average for all cribs of 1,889 per milliliter. The annual plankton content of raw Lake Michigan water has been steadily increasing since 1938, when the average was 815 per milliliter. Occasionally musty, oily, and medicinal tastes and odors are reported in the treated water supply. The 1940 *Annual Report* of the Division of Water Purification stated that such odor periods occurred on October 13 and

December 16 of that year. The *Public Health Service Drinking Water Standards* state: "The water shall have no objectional taste or odor."

The United States Public Health Service standards for filtered water relative to turbidity, odor, and tastes have been purposely applied to the unfiltered Chicago supply to indicate that the water does not meet those requirements now considered satisfactory for a municipal supply.

CENTRAL DISTRICT This district serves a total population of 1,691,000, of whom 1,406,000 live in the city and 285,000 in the suburbs. There are 140,905 water accounts. The William E. Dever Crib, located 13,800 feet from shore in 35 feet of water, supplies five pumping stations located in the Central District: Springfield Avenue, Central Park Avenue, Chicago Avenue, Cermak Road, and Twenty-second Street. The Four-Mile Crib, located 16,600 feet from shore, supplies the Fourteenth Street Pumping Station. As in the North District, chlorination at the stations is the only treatment given the supply. In 1945 the average daily pumpage of the six stations supplying the district, which has an area of 48 square miles within the city, totaled 440.93 million gallons per day, which was 46 percent of the total water pumped by the Chicago Water Works.

Table 6 presents statistics for the six pumping stations in the Central District.

TABLE 6. CHICAGO WATER-WORKS SYSTEM—CENTRAL DISTRICT

| <i>Pumping Station</i> | <i>Rated Pumping Capacity (In millions of gallons per day)</i> | <i>Rated Chlorine Capacity (In pounds per day)</i> | <i>Average Daily Pumping (In millions of gallons per day)</i> | <i>Average Chlorine Dosage (In pounds per million gallons)</i> | <i>Residual Chlorine (In pounds per million gallons)</i> |
|-----------------------------------|--|--|---|--|--|
| Springfield | 200 | 2,880 | 84.56 | 6.30 | 4.2 |
| Central Park | 260 | 2,880 | 101.54 | 6.20 | 4.5 |
| Chicago | 210 | 2,400 | 82.75 | 6.84 | 4.8 |
| Cermak | 300 | 2,880 | 106.50 | 6.17 | 3.8 |
| 22d Street | 69 | 1,200 | 45.14 | 6.13 | 4.1 |
| Average for water from Dever Crib | ... | ... | ... | 6.33 | ... |
| 14th Street | 100 | 1,200 | 20.44 | 6.06 | 4.8 |
| All stations | 1,139 | 13,440 | 440.93 | | |

Water Treatment.—The chlorine dosage applied to the Dever Crib and the Four-Mile Crib supplies in 1945 averaged 6.33 and 6.06 pounds per million gallons, respectively, leaving chlorine residuals

of 4.3 and 4.8 pounds per million gallons in the water pumped to the distribution system. The chlorination equipment capacity at the stations supplied by the Dever Crib is ample for applying these dosages. Table 7 lists the calculated maximum dosage capacities, using 1945 pumpage data.

TABLE 7. CHLORINATION CAPACITY—CENTRAL DISTRICT

| STATION | PUMPAGE RATES | | MAXIMUM CHLORINE DOSAGE USING ALL CHLORINATION EQUIPMENT | | MAXIMUM DOSAGE RECOMMENDED BY USPHS (In pounds per million gallons) |
|--------------|---|---|--|-------------------------------------|---|
| | <i>Maximum Day (In millions of gallons per day)</i> | <i>Maximum Rate (In millions of gallons per day for 1 hour or more)</i> | <i>(In pounds per million gallons)</i> | | |
| | | | <i>Maximum Day Pumpage</i> | <i>Maximum Rate Pumpage</i> | |
| | | | | | |
| Springfield | 112.50 | 144 | 25.6 | 20.0 | 15 |
| Central Park | 125.17 | 150 | 23.0 | 19.2 | 15 |
| Chicago | 95.16 | 136 | 25.2 | 17.6 | 15 |
| 22d Street | 76.30 | 85 | 15.7 | 14.1 | 15 |
| Cermak | 157.90 | 191 | 18.2 | 15.1 | 15 |
| 14th Street | 43.59 | 54 | 27.6 | 22.2 | 15 |

Water Quality.—The physical characteristics (turbidity, taste, and odor) of the supply from intakes of the W. E. Dever and the Four-Mile cribs are similar to the Wilson Avenue Crib supply, but the bacteriological results of raw water samples for the period 1940–45 indicate that this central supply is of better bacterial quality. However, days with raw water contamination exceeding 50 coliforms per 100 milliliters do occur in this district, as shown in Table 8, pre-

TABLE 8. BACTERIOLOGICAL QUALITY OF RAW WATER—CENTRAL DISTRICT

| YEAR | YEARLY AVERAGE COLIFORM PER 100 MILLILITERS | | NUMBER DAYS COLIFORM EXCEEDED 50 | | NUMBER MONTHS MONTHLY AVERAGE EXCEEDED 50 | | NUMBER OF DAYS INDICES EXCEEDED 1000 PER 100 MILLILITERS | |
|------|---|------------------|--|------------------|---|------------------|---|------------------|
| | <i>Dever</i> | <i>Four-Mile</i> | <i>Dever</i> | <i>Four-Mile</i> | <i>Dever</i> | <i>Four-Mile</i> | <i>Dever</i> | <i>Four-Mile</i> |
| 1940 | 6.5 | 11.8 | 4 | 2 | 0 | 1 | ... | 1 (2,400) |
| 1941 | 10.9 | 19.5 | 3 | 6 | 0 | 2 | ... | 1 (2,400) |
| 1942 | 15.8 | 8.7 | 5 | 6 | 1 | 0 | 1 (2,400) | ... |
| 1943 | 6.7 | 7.2 | 6 | 4 | 0 | 0 | 1 (3,500) | ... |
| 1944 | 10.2 | 28.7 | 3 | 15 | 1 | 1 | 1 (5,400) | 1 (5,400) |
| 1945 | 4.0 | 16.0 | 3 | 13 | 0 | 1 | ... | ... |

pared for the period 1940–45. The number of months the monthly average exceeded 50, and peak coliform organism values are also listed.

In 1945, 3,194 bacteriological samples of chlorinated water were collected at the five pumping stations supplied by the W. E. Dever Crib and 471 at the Fourteenth Street Station. The average number of coliform organisms per 100 milliliters occurring in these samples was 0.19 and 0.21, respectively. Of the total number examined, 163 treated water samples tested "positive" for coliform. Samples collected in the distribution system numbered 1,677. The results of the bacteriological examination of this group showed a yearly average of 0.08 coliforms per 100 milliliters.

The bacteriological results of the treated water samples did, however, meet the requirements of the *Public Health Service Drinking Water Standards*.

Turbidity.—Early records of the Department of Public Works reported a period of approximately six-months' duration during 1929–30 when the daily turbidity of the supply in this district was greater than 20 and reached a maximum of 350 on one day. The maximum daily average for the period 1940–45 was 41. Table 9

TABLE 9. TURBIDITY IN UNITS—CENTRAL DISTRICT

| YEAR | YEARLY AVERAGE | | MAXIMUM DAILY AVERAGE | | PERCENT TIME TURBIDITY EXCEEDED 10: |
|------|----------------|------------------|-----------------------|------------------|---|
| | <i>Dever</i> | <i>Four-Mile</i> | <i>Dever</i> | <i>Four-Mile</i> | ALL CRIBS |
| 1940 | 5.4 | 5.2 | 34.0 | 20.0 | 12.8 |
| 1941 | 6.9 | 6.3 | 41.0 | 25.0 | 18.3 |
| 1942 | 3.7 | 3.8 | 28.6 | 30.0 | 6.2 |
| 1943 | 6.4 | 6.6 | 30.0 | 25.0 | 12.6 |
| 1944 | 4.8 | 5.7 | 21.7 | 35.0 | 7.6 |
| 1945 | 3.1 | 3.3 | 32.0 | 40.0 | 2.5 |

presents a summary of yearly average turbidities, maximum daily averages, and the percentage of time the turbidity exceeded 10 during this period.

High Dosage Research.—During 1945 high-chlorine-dosage research was conducted at the Chicago Avenue Pumping Station. Dosages varying from 7 to 20 pounds per million gallons were applied during July and the first week of August. Although water with residual values exceeding 12 pounds per million gallons (1.4 parts per million) was pumped into the distribution system, no complaints regarding the taste of the water were received. Threshold odor determination on treated-water samples indicated a substantial improvement after high-dosage treatment compared with marginal or normal treatment. Because the raw lake water during the test period was

of exceptionally good bacteriological quality, it was difficult to report definite conclusions as to improved bacterial efficiency. The routine threshold odor determinations on the North and the Central District supplies, discontinued in 1941, should be resumed and further studies of high-chlorine-dosage application should be made on the North and the Central District supplies.

SOUTH DISTRICT The South District is now supplied with water from Lake Michigan from a direct lake intake within the breakwater at the east end of the South District Filtration Plant. This plant is in partial operation, providing chlorination, coagulation, and sedimentation treatment. Continuous operation of this plant was started October 7, 1945. Complete processing of the supply, that is, chemical treatment, coagulation, sedimentation, filtration, chlorination, and taste and odor removal, will be practiced upon completion of the filters. With completion of changes now under way it will be possible for this plant to obtain lake water from within the present intake inside the breakwater or from the E. F. Dunne Crib. Selection of the water best suited for treatment will then be possible.

Treated water from the filtration plant flows by gravity to Sixty-eighth Street, Roseland, and Western Avenue pumping stations. The water is then pumped into the distribution system by these stations. In 1945 the average daily pumpage of the three stations supplying the South District, with an area of 113 square miles and a total population of 1,319,000, was 334.58 million gallons per day, equivalent to 34 percent of the total city pumpage. The city population served was 1,219,000, and the suburban population, 100,000. There were 151,793 water accounts.

Table 10 presents statistics for the two pumping stations and the South District plant.

Water Treatment.—The 1945 yearly average of chlorine dosage applied to the South District water supply was 14.15 pounds per million gallons, and the residual chlorine in the water pumped into the distribution system was 6.5 pounds per million gallons. Prior to October 7, 1945, when the treatment plant was placed in continuous operation, the chlorine was applied to the raw lake water at the E. F. Dunne Crib.

Chemical treatment control at the filtration plant is conducted on a 24-hour schedule by a staff of chemical control engineers. The only coagulating chemical used in 1945 was aluminum sulfate, the average dosage being 102 pounds per million gallons. The average

TABLE 10. CHICAGO WATER WORKS—SOUTH DISTRICT

1945 PUMPING-STATION STATISTICS

| 1945 Source | Pumping Stations | Rated Pumpage Capacity (In millions of gallons per day) | Average Daily Pumpage (In millions of gallons) | Average Total Chlorine Dosage (In pounds per million gallons) | Average Pre-chlorination Dosage | Average Dosage at Pumping Station | Average Chlorine Residual at Pumping Station |
|---|-------------------------|---|--|---|---------------------------------|-----------------------------------|--|
| 68th St. and E. F. Dunne Crib and South District Filtration Plant | 68th St. | 184 | 117.49 | 13.75 | 11.65 | 2.10 | 7.0 |
| | Western Ave. | 300 | 145.18 | 14.04 | 11.51 | 2.53 | 6.6 |
| | Roseland | 150 | 71.91 | 14.84 | 11.48 | 3.36 | 6.5 |
| | South District averages | ... | 334.58 | 14.15 | | | |

SOUTH DISTRICT FILTRATION PLANT DATA^a

| SOURCE | RATED CAPACITY | 320 MILLION GALLONS PER DAY | | MAXIMUM CAPACITY | 532 MILLION GALLONS PER DAY | | |
|---|--------------------------------------|--|--------------------------------|--------------------------------------|--|---|--|
| | Low-Lift- Pump Capacity | Chemical Treatment | Chlori- nation Capacity | Ammo- nium Sulfate Capacity | AUG. 16-DEC. 31 | | DEC. 14-31 |
| | | | | | Average Chlorine Dosage | Average Alumi- num Sulfate Dosage | Average Ammo- nium Sulfate Dosage |
| E. F. Dunne Crib and direct lake intake | 750 million gallons per day | Aluminum sulfate, chlorine, ammonium sulfate | 15,000 pounds per day | 2,700 pounds per day | 12.8 pounds per million gallons Max. 19.2 Min. 8.9 | 102 pounds per million gallons Max. 133 Min. 96 | 6.7 pounds per million gallons Max. 8.3 Min. 4.3 |

^a The source of supply will be the E. F. Dunne Crib or the direct lake intake. The pumps in the low-lift pumping station lift the raw water 18 feet. The water flows by gravity through three mixing and settling basins. From the settling basins it will pass through the rapid sand filters and then to two main filtered water reservoirs. Treatment will consist of coagulation with aluminum sulfate, and at times lime or acid treated sodium silicate will also be used; taste and odor removal through use of activated carbon; pre- and post-chlorination with ammoniation when necessary complete filtration.

detention period in the settling basins at this plant is 3.6 hours. Present chlorination practice is to add sufficient chlorine to produce a minimum residual chlorine of 5 pounds per million gallons leaving the filtration plant. The chlorination equipment at the three South Side pumping stations is used for standby service.

Water Quality.—In 1945, 2,122 raw-water samples from intakes of the Sixty-eighth Street and the E. F. Dunne cribs and the direct lake intake at the South District Filtration Plant were collected for bacteriological examination. The yearly average of coliform organ-

isms per 100 milliliters was 134.5. During six months of the year the monthly average exceeded 50 coliforms per 100 milliliters, indicating that this supply is still the most heavily contaminated. The average of the coliform organisms in the supply taken from the direct lake intake from September 1 through October 10, 1945, was 608.1 per 100 milliliters.

Treated-water samples, numbering 2,522, collected at the pumping stations in 1945, showed, upon bacteriological examination, an average coliform value per 100 milliliters of 0.038, the lowest value of all three districts. This figure reflects the effectiveness of prechlorination at the lake intake, which allows better control of chlorination application and a longer period of time during which the chlorine is in the water before its ultimate consumption by the people. The 1,340 distribution samples examined had an average coliform value of 0.009 per 100 milliliters, the lowest value of all three districts.

The treated-water samples met the United States Public Health Service standards as to bacteriological quality.

Turbidity and Odor Periods.—Lake storms created a maximum “daily average” turbidity on September 28, 1945, of 188 parts per million at the South District lake intake. However, during this period the partial treatment with alum (aluminum sulfate) for coagulation produced an effluent with maximum turbidity of 10. The highest daily average turbidity in 1945 at the Dunne Crib was 45. Several taste and odor periods were noted during the past year. The most outstanding period occurred when an oily taste was noticed in the water discharged by the South District treatment plant for an extended period in November. During periods when obnoxious odors arose from the water taken in at the South District plant, abnormal chlorine absorptive properties were experienced. It was necessary to apply as much as 22 pounds per million gallons to the water to produce a satisfactory residual in the plant effluent at the outlet. Until the filter units are placed into operation, it is impractical to eliminate taste and odor in the South District supply.

PROPOSED CENTRAL AND NORTH DISTRICT FILTRATION PLANTS

The filtration program for the city of Chicago was originally sanctioned by the voters in 1930, when by a two-thirds majority they approved filtration for Chicago's water supply. Appropriate legislation was secured, permitting the financing of filtration projects by water certificates and authorizing the park boards to release park property

for filter plant construction. With the South District Filtration Plant in partial operation, the city has started actively on its plans for filtration for the Central and North districts.

The Chicago Postwar Planning Commission recently secured state funds and a Federal loan for use in preparing plans and specifications for the Central and North districts. The 1946 annual appropriation ordinance of the city included \$1,000,000 to start the planning of filtration plants for these districts. The city has retained consultants to advise concerning the size, location, and general design of the plant or plants which will be required for the territory not served by the South District plant.

CHICAGO PARK DISTRICT WATER-SUPPLY PUMPING STATIONS

The Chicago Park District operates three pumping stations during the summer season that supply Lincoln, Grant, Jackson, and Washington parks. During the remainder of the year the park areas are served by the city distribution systems. These stations take water from the city tunnel-supply systems, chlorinate at the suction side

TABLE 11. 1945 OPERATING AND TREATMENT DATA—
CHICAGO PARK DISTRICT

| <i>Pumping Station</i> | <i>Pumpage Capacity (In millions of gallons per day)</i> | <i>Operating Season</i> | <i>Season Pumpage (In millions of gallons)</i> | <i>Average Chlorine Dosage (In pounds per millions of gallons)</i> | <i>Average Residual (In pounds per millions of gallons)</i> | <i>Raw Water Average Coliform per 100 Milliliters</i> | <i>Treated Water Average Coliforms per 100 Milliliters</i> |
|------------------------------|--|-------------------------|--|--|---|---|--|
| Wilson | 35 | June 1– Sept. 28 | 547.35 | 7.09 | 4.6 | 80.1 | 0.03 |
| Park Row | 10 | May 16– Sept. 28 | 408.06 | 7.70 | 4.2 | 26.5 | 0.30 |
| Washington Park ^a | 11.5 | May 31– Sept. 27 | 308.07 | (10.32+ 5.17) 15.49 | 7.1 | Pretreated 0.02 | 0.0 |

^a Washington Park Pumping Station receives pretreated water from the South District tunnel system. Average chlorine dosage applied at the pumping station was 5.17 pounds per million gallons.

of the pumps, then pump the treated water into the park water-supply distribution system. In the 1945 season the three stations, namely, Wilson Avenue, Park Row, and Washington Park, applied 8,894 pounds of chlorine to 1,263 million gallons of water pumped. The 1945 operating and treatment data for the Chicago Park District pumping stations are summarized in Table 11.

These pumping stations are operated by Park District personnel,

and chlorination treatment is supervised by the Division of Water Purification. Chlorine dosages are ordered, and bacteriological control administered as at city pumping stations.

WELL SUPPLIES IN CHICAGO

Seventy-six wells (5 private, 70 industrial, 1 municipal) are reported in use in Chicago, with an estimated daily discharge of 23.18 million gallons.² Well water is used in preference to the public water supply, for the following reasons: the city water supply is insufficient or not available; the well water costs less; its constant temperature characteristics are more desirable for certain uses; the well water has more desirable characteristics for manufacturing processes.

In a report made in 1930 by the Department of Public Works on the use of well water in Chicago, it was reported that results of bacteriological examination of samples of water collected from forty-three wells in use indicated water from 37.3 percent of them unsafe for drinking purposes. Yet approximately 10 percent of this unsafe water was so used. No bacteriological survey of wells in Chicago has been made by a city agency since the preparation of the 1930 report.

As far as could be learned, there is no current city record of the number of wells located in Chicago or of the extent to which the water therefrom is used.

ADMINISTRATION AND ACTIVITIES OF DEPARTMENT OF PUBLIC WORKS

In the city of Chicago the water works is under the control and jurisdiction of the commissioner of public works, who is responsible in authority to the mayor and the city council. The Bureau of Water and the Bureau of Engineering under the Department of Public Works administer, control, operate, and supervise the Chicago Water Works.

THE BUREAU OF WATER The Bureau of Water is the accounting and collecting division of the water-works systems and is not concerned with operation. In 1945 the total revenue amounted to \$16,816,874.01. The assessed (unmetered water) rate collections amounted to \$3,822,815.92, and the meter rate collections \$12,515,582.06. Water consumption statistics for 1945 show the percentage of water consumption metered as equal to 45.71 percent, indicating a somewhat inequitable condition relative to water revenues re-

² Illinois State Water Survey Division, *Ground Water Supplies of the Chicago-Joliet-Chicago Heights Area*, Bulletin No. 23, 1943.

ceived and water consumption, between the assessed and the metered services. The city, however, incurs expenses for reading and maintaining meters, which are not required for the assessed services.

The rate for metered water is 60 cents per 1,000 cubic feet, subject to a discount of 8 percent if the amount charged is paid within ten days from date of bill. There is no minimum or service charge. Water meters are required on service pipes supplying city water to buildings or premises, the gross charge for which under the assessed rates would amount to \$35.00 per annum or more. Water meters are not required in private residences in which only one family resides or in two-flat buildings in which only two families reside.

Under assessed (unmetered water) rates there are various charges which in general and briefly are as follows.³

A minimum annual charge depending on the front width of the building:

| | |
|--|---------|
| 12 feet or less | \$ 2.50 |
| Exceeding 12 feet, but not exceeding 15 feet | 3.50 |
| Exceeding 15 feet, but not exceeding 18 feet | 4.50 |
| Exceeding 18 feet, but not exceeding 21 feet | 5.50 |
| Exceeding 21 feet, but not exceeding 24 feet | 6.00 |
| Exceeding 24 feet, but not exceeding 27 feet | 7.00 |
| Exceeding 27 feet, but not exceeding 30 feet | 8.00 |
| Exceeding 30 feet, but not exceeding 33 feet | 9.00 |
| Exceeding 33 feet, but not exceeding 36 feet | 9.50 |
| Exceeding 36 feet, but not exceeding 40 feet | 11.00 |
| Graduated to 87 feet | 20.00 |

An additional charge of \$1.50 per annum for each story in excess of one story.

An additional charge of \$7.00 per annum for each flat or apartment in excess of one, having one water closet, one bath, and one sink.

An additional charge of \$2.00 per season for a hose used for sprinkling, for a frontage of 30 feet or less.

Water rates or charges under the assessed rates are paid semi-annually and are allowed a discount of 8 percent if paid within an allowable period.

There appears to be little relationship between the method of assessing charges and the probable amount of water used.

THE BUREAU OF ENGINEERING The Bureau of Engineering, under the direction of the city engineer, together with the Division of Construction, the Division of Water Pipe Extension, the Division

³ Condensation of Section 206 (Water Charges) in Chapter CLXXXV of the *Municipal Code of Chicago*.

of Operation, and the Division of Water Purification construct, maintain, operate, and control the Chicago Water Works.

All construction work pertinent to the water works is the responsibility of the Division of Construction. The Division of Water Pipe Extension includes the following functions in its activities: design, construction, maintenance, and operation of the water-distribution system; meter testing; plumbing inspection; inspection of the installation of service pipes; inspection of taps. The Division of Operation operates the cribs and the twelve city water pumping stations, each of which includes a chlorination treatment plant.

The Division of Water Purification is made up of the Water Safety Control, Filtration, and Design sections, and includes the following functions: chlorination control; water quality surveys and investigations; filtration program studies, design, and specifications; and administration and control of the South District Filtration Plant.

WATER-TREATMENT PERSONNEL

To compare the qualifications of the city-chlorine-attendant operating personnel with their respective duties and responsibilities, personnel questionnaires were requested of this group of employees, which numbers approximately fifty-six. Forms were distributed by officials of the Department of Public Works, but personnel information requested of this group was denied the Chicago-Cook County Health Survey.

The chlorine attendant operates the chlorinating equipment, makes residual chlorine control tests, reads pumpage indicators and charts, and makes other determinations on the physical characteristics of the supply; all these operations indicate the attendant's great responsibility. A review of past records revealed that while some of the operators have the experience and ability to meet these responsibilities satisfactorily, the work of many newly assigned chlorine attendants, occasional relief employees, and others with insufficient training has been unsatisfactory because of their failure to follow the chlorination operations recommended in the city chlorination manual.

Corrective or departmental action by the Division of Water Purification on departures from correct chlorination operation (450 in 1945) is taken usually only after operating records have been checked or field inspectors have noted such departures from the specified

rules and regulations. Such delayed supervision permits possible erroneous practices to continue for several days without detection. It would be highly desirable to have all future chlorine attendants and potential relief employees examined and trained by technically trained sanitary engineers. Approval and certification by the engineers should then be required before the chlorine attendants and relief employees were permitted to chlorinate the public water supply.

The Division of Water Purification, with technically trained sanitary engineers, made an effort during March and April, 1945, to provide special training for all newly appointed chlorine attendants before they assumed their duties in chlorinating plants at the pumping stations, in order to obtain more effective chlorine operation and control. The division reported that this program was terminated after two months of successful operation.

At the three Chicago Park District pumping stations, the operating engineers operate the pumping equipment and perform the duties of chlorine attendants in chlorinating the water pumped by the stations. This group of employees is directly responsible to the Chicago Park District, and the Division of Water Purification only supervises their water-treatment operations. Field engineers of the purification division interview all newly assigned and relief operating engineers *after* they are on the job. If an operator by his performance demonstrates that he is unqualified to chlorinate the water supply properly, park officials are requested by the purification division either to have the operator given more training by an experienced park operator or to replace him. A preliminary screening or examining schedule of the new relief park operators or the relief employees would be more effective in obtaining proper treatment.

The technical group of employees in the Division of Water Purification consists of 24 engineers, 7 chemists, 1 biologist, and 5 laboratory assistants. Of this number, 22 hold degrees in engineering, chemistry, or biology from recognized accredited colleges, and 13 have had some college training. Those not holding professional degrees have been given on-the-job training prior to assuming their duties. In addition to the technical group, 15 nontechnical employees are engaged in water-sample collection, lake-front inspection, and dredging inspection. The water-sample collector checks on the chlorine operation at the time of collection of samples at each pumping station.

WATER-SAFETY CONTROL MEASURES

CHLORINATION CONTROL Treatment of the water supply in the North and Central districts, which consists of chlorination at the pumping stations, is carried on under a co-operative arrangement between the Division of Operation and the Division of Water Purification. Since chlorination is the only treatment process applied, it is imperative that continuity of proper application of chlorine be maintained at all times.

The Division of Operation is responsible for procedures at each plant, with supervision by the Division of Water Purification. To ensure continuous treatment, a chlorine attendant, an employee of the operating division and responsible to the chief operating engineer of the pumping station, is on duty at all times at each pumping station to operate the equipment, make control tests, and keep a record of operating conditions. A chlorination manual issued by the two divisions outlines information and instructions concerning the supplying, the use, and the control of chlorine and chlorination equipment. The rate of chlorine fed is set manually on the chlorine machine to correspond to the rate of pumpage and ordered dosage. The chlorine batteries are installed on scales to check and verify the actual application of chlorine by hourly scale-loss readings. The effectiveness of the treatment is determined by routine residual chlorine tests made each hour.

Rates of chlorine dosage in pounds per million gallons are recommended by the Division of Water Purification based upon past dosage rates, residual chlorine tests, bacteriological tests, and other factors which might reflect water-quality characteristics, such as wind movements, precipitation, emergencies in the distribution system, construction relative to the water works, and other factors. The variable character of Lake Michigan raw water, with its chlorine absorptive properties and contamination, imposes great responsibility upon those engaged in chlorination control. Present practice is to maintain a minimum dosage of 6 pounds per million gallons at stations in the North and the Central districts, to ensure a greater factor of safety in guarding against changes in chlorine demand. However, during periods of abnormal chlorine absorption, the minimum 6-pound dosage normally carried is inadequate to provide proper chlorination treatment, so that with the present control system,

proper and accurate chlorine determinations each hour are the major safety factors in protecting the supply.

The current chlorination-control procedure in the North and the Central districts has no direct 24-hour control administered by technically trained personnel, but relies upon the performance and the reports of nontechnical employees. Should the chlorine attendant at the first station, supplied by the land-tunnel system, fail immediately to report and act upon a decrease in residual chlorine below the limits set by the Division of Water Purification, inadequate treatment would result. Inadequate dosages would also be in effect, at least temporarily, at chlorinating plants inland along the tunnel system upon the arrival of this higher-chlorine-demand water. Preliminary chlorine-demand tests on the raw water supply ahead of the chlorinating plants, were this procedure practical, would appear desirable in order to ensure more accurate chlorine-dosage forecasts.

A technically trained staff at the first pumping station in each of these two districts to examine the water would assist considerably in maintaining more rigid 24-hour control over the chlorination of two thirds of the public water supply. Rigid chlorination control has been maintained in the South District since 1936. From 1936 to 1945 the control station was operated in conjunction with the E. F. Dunne Crib Treatment Plant, and since 1945, has been under the South District Filtration Plant.

The city has recognized the need for strengthening its present control system in the North and the Central districts and has recently installed automatic chlorine residual recorders at Chicago Avenue, Cermak, and Thomas Jefferson pumping stations. The recordings can be compared with the chlorine attendants' entries.

At the time of daily water sampling at each pumping station, the water sampler, an employee of the Division of Water Purification, includes residual chlorine tests, scale and chlorine delivery observations, in addition to his sampling routine. One technically trained sanitary engineer devotes his entire time to routine field supervision and inspection of chlorination treatment operation and equipment. The frequency of inspection per pumping station by this engineer averages about one per week. His principal duties include the following: verification by field tests of the control and delivery of chlorine reported by the chlorine attendant; special educational instruction to the attendants; delivery and capacity tests on the chlorine equip-

ment; observation of practiced operating procedures; and recommendations of improvements in chlorinating equipment.

A detailed review and check of the daily chlorine operation records kept by the chlorine attendant are made by the Division of Water Purification. These operating records of one day reach the office on the following day and are checked in detail on the second day. Records kept by the Division of Water Purification of chlorination irregularities and departures from correct operation indicate the necessity for more rigid control and for having properly trained chlorine attendants on duty at all times.

Treatment of the water supply in the South District has been under the immediate direction of technical personnel of the Division of Water Purification since 1936. Since initiation of the operations at the filtration plant, pumping station chlorination treatment is unnecessary and has been discontinued, except during periods when the water arriving at the stations from the filtration plant has a chlorine residual of less than 4 pounds per million gallons, at which time a supplementary dosage is applied at the pumping stations. Automatic chlorine-residual recording devices are installed at the filtration plant to record chlorine residuals in the effluent of the mixing basin and in the water as it leaves the plant. Residual recorders have also been installed at Roseland and Western Avenue pumping stations.

SANITATION CONTROL OF RAW-WATER SUPPLY In order to prevent local contamination of the raw-water supply at each crib by employees stationed there for maintenance purposes, adequate provisions are made for proper disposal of all wastes. All men stationed on the cribs are examined to determine if they are carriers of typhoid fever, amoebic dysentery, or other intestinal diseases. Carriers are not permitted to work at the cribs.

The city prohibits the discharge of sewage wastes from vessels within four miles of any water intake and the dumping of dredged or excavated material, except in areas authorized by the government, which are 13 miles from shore. The Division of Water Purification has a force of dredging inspectors to see that this provision is followed. Land-fill work along the lake shore is also inspected by these men.

Special attention has been given to construction and inspection of the tunnel system to eliminate contamination by surface and

ground water. Sewers and drains within a minimum of 50 feet of tunnel shafts generally have been replaced with cast iron pipe to prevent leakage.

LABORATORY CONTROL Representative raw- and treated-water samples are collected daily from all pumping stations and land tunnels, as well as a number of samples throughout the distribution system, to determine the bacterial quality and to check the effectiveness of the chlorination treatment. Samples are collected by employees of the Division of Water Purification and are submitted to the health department for examination. Samples collected in connection with the operation of the South District Filtration Plant are examined in the plant laboratory.

Raw-water samples are collected from special sampling pumps at points on the tunnel system ahead of chlorination treatment. One or more raw (classified as pretreated from South District Pumping Station) samples are collected daily at each of the twelve stations. Treated-water samples are collected from sampling lines on the pump discharge mains. Distribution samples are collected from thirty-eight points on the system. Since March 1, 1943, the city has used sterile bottles containing sodium thiosulfate, a dechlorinating agent, for collection of treated samples in accordance with the United States Public Health Service standards. When this method of collection is used, the laboratory examination of a treated-water sample indicates the true bacterial quality of the water at the sampling point at the time of collection. This result is not obtained when regular sterile bottles are used and chlorine continues to act as a bactericidal agent during transit to the laboratory thereby causing a reduction in living organisms before examination at the laboratory.

Collection of samples during 1945 included 7,629 samples of raw water from the crib intakes and pumping stations; 8,105 samples of treated water as it was pumped into the distribution system; 4,073 samples in the distribution system. Special routine samples are also collected for odor, turbidity, plankton organisms, and chemical analyses. A total of 36,684 samples were collected and submitted for laboratory examination.

SAFETY CONTROL MEASURES IN THE DISTRIBUTION SYSTEM A series of sanitary measures have been adopted by the city to ensure a safe water supply from the chlorinating plant at the pumping station to the free flowing tap of the consumer. All new mains are

chlorinated with a dosage to provide a 400-pound-per-million-gallon residual in the water. New mains are not placed in operation until satisfactory bacteriological results have been obtained. Mains that have been repaired are also sterilized when in the opinion of the engineer in charge pollution of the main has occurred. During emergency conditions, such as large fires, main shut-downs, and low-pressure conditions, sanitary engineers are assigned to investigate the water-supply condition in the vicinity and to take the necessary precautions to protect its safety. Consumer complaints are investigated, also. The city has mobile chlorination equipment to use in emergencies. Building systems, housing projects, suburban supply systems and water works, temporary service lines, water system appurtenances, tunnels, and shafts are among the items sterilized in safeguarding the water supply.

During 1945, 144 consumer complaints, 39 major fire calls, and 71 water main investigations of distribution systems constituted the major safety-control activities of the Division of Water Purification.

CROSS-CONNECTION REGULATIONS The city of Chicago has ordinances which prohibit the cross-connection of systems supplied directly from city water with a secondary water system. A number of chapters in the municipal code include the rules and regulations regarding water-pipe installations and systems. The Department of Public Works recognizes that strict supervision and inspection must be given in Chicago to the prevention of cross-connections between the city water systems and private water systems, in order to furnish the ultimate consumer a safe, uncontaminated supply. The divisions of Water Purification and Water Pipe Extension maintain sanitary engineers and plumbing inspectors to investigate and to prevent water contamination resulting from cross-connections and improper plumbing installations. The annual appropriation ordinance also provides for plumbing inspection personnel in the building department. The activities of each group will be discussed separately, in an endeavor to illustrate the present method followed in cross-connection water contamination surveys.

Prevention of Cross-Connections.—In Chicago this task is a gigantic and important one, since many industrial plants in this area located on the Chicago and the Calumet rivers and on Lake Michigan use these contaminated waters for fire protection and industrial purposes at higher pressures than are maintained in the city system.

Approximately 180 river-water connections are in use in Chicago. The seventy-six private-well supplies used in Chicago also constitute a secondary water supply which must be watched.

Complaints directed to the Division of Water Purification regarding water of questionable quality are either made directly to the division office by the complainant or are relayed from the Division of Water Pipe Extension or from the health department. Investigations and surveys made by the Division of Water Purification concerning cross-connections and improper plumbing installations have been made usually as a result of water complaints. A summary of cross-connections resulting in pollution of water supply systems, prepared by the Division of Water Purification, lists twenty-seven instances from 1928 to 1945 when the public water supply was polluted from a secondary source. The Division of Water Purification, after making a sanitary investigation of the supply, notifies the Division of Water Pipe Extension of code violations. Plumbing inspectors from this division then make complete and detailed plumbing surveys, serve notices, and make follow-up inspections until all dangerous installations and connections are eliminated.

INSPECTION ACTIVITIES OF THE DIVISION OF WATER PIPE EXTENSION

Water contamination surveys, inspections of premises where expansion programs necessitate an increase in the service, air conditioning and refrigerating installation inspections, war plant surveys, and relief valve inspections are the principal functions of the plumbing personnel employed in the Division of Water Pipe Extension. Table 12 presents a summary of the number of violations of various types uncovered by inspectors of the Division of Water Pipe Extension in the years 1944 and 1945, together with the number eliminated as a result of these inspections.

Records of the division list twenty-six river-front properties which were inspected and about which violations were noted which have not yet been abated. Follow-up inspections to enforce abatement at these premises and the reinspection of all river-front properties at regular intervals should be instituted immediately by the group of inspectors making water contamination surveys. In fact, all premises using city water and having secondary water systems should be inspected at regular intervals by the water department to guard against contamination of the public supply.

Plumbing plan examiners from the Division of Water Pipe Extension

TABLE 12. VIOLATIONS UNCOVERED BY INSPECTORS OF WATER PIPE
EXTENSION DIVISION, 1944-45

| CLASSIFICATION | 1944 | | 1945 | |
|--|-------------------|----------------------------------|-------------------|----------------------------------|
| | <i>Violations</i> | <i>Violations Eliminated</i> | <i>Violations</i> | <i>Violations Eliminated</i> |
| Water contamination survey | 26,555 | 11,812 | 16,805 | 9,716 |
| Inspection of premises where expansion programs necessitated increased size of service | 104 (premises) | 1,288 ^a | 127 (premises) | 404 ^a |
| Air conditioning and refrigeration installation inspections | 3,432 | 1,847 | 3,921 | 1,625 |
| War plant surveys | 2,296 | 1,697 | 1,327 | 301 |
| Relief valve inspections | 3,074 | 1,186 | 1,540 | 486 |
| Total | 35,461 | 17,830 | 23,720 | 12,532 |

^a Many violations may be recorded at one premise.

sion review and approve drawings and plans of water-supply systems for new and altered buildings to determine location and adequacy of the water main in the street, the service pipe, and the building system piping, and note cross-connections and other conditions permitting possible back-flow into the city water distribution system.

A plumbing inspector in charge of the Bureau of Plumbing Inspection, under the direction of the commissioner of buildings, has charge of the approval of all drawings and plans for the installation of plumbing and drainage in new and reconstructed buildings, the inspection of this plumbing during construction, and approval upon completion. The Bureau of Housing Inspection of the building department makes plumbing inspections in connection with complaint investigations in existing buildings. Reports are made, however, only on the physical condition of the system. Code violations such as cross-connections, piping installations, and fixtures which would allow back-siphonage under certain hydraulic conditions within the system are not reported, although these are potential contributors to water contamination.

EDUCATIONAL ACTIVITIES The division, as an educational and training feature, maintains a testing laboratory. Transparent tubing and colored fluids are used to make visible the action of water in piping systems under varying conditions. Various plumbing accessories are on display under test and manufacturers' products are tested before receiving city approval. Demonstrations and appropriate lectures are given at regular intervals at this laboratory to members of the medical profession, architects, builders and contractors,

hospital officials, property managers, engineers, plumbers, apprentice plumbers, and other interested persons. The attendance at these demonstrations has been of great value to the Department of Public Works in that the public has been awakened to the dangers of water contamination within a building.

EXCESSIVE USE OF WATER IN CHICAGO

The average daily per-capita consumption of water in Chicago in 1945 was 262.8 gallons. The 1930 average daily per-capita consumption of 301.9 gallons was the highest value recorded in any year by the city of Chicago. Comparing the standing of Chicago with other large cities in the United States, it is seen that the daily per-capita consumption is nearly twice that in the other cities. The average daily per-capita consumption in communities outside of Chicago supplied by the Chicago Water Works in 1945 was 151.3 gallons. The water users in these communities are 100 percent metered. Such differences are excessive and warrant careful engineering study.

One notable difference between Chicago and other cities is the basis of charging for water service. In 1945 only 27.36 percent of the city water services were metered, the remainder of the services being on the assessed rate. A study made by the Division of Water Pipe Extension of the distribution of water pumped in 1944 shows that the population represented by the domestic assessed water account was 1,786,245. This represents approximately 50 percent of the total city population. The consumption rate of this group was 140 gallons per capita per day. The domestic metered accounts represent a population of 1,271,990, with a daily per-capita consumption of 87 gallons. While stores and flats assessed for water used 568 gallons daily per capita, other stores and flats in which water was metered consumed only 98 gallons. These comparisons indicate excessive water waste on assessed premises. This waste is reported to be due to the following causes: the use of defective plumbing fixtures, which allow a continuous flow of water; the continuous flow of water from fixtures during the winter season to protect exposed plumbing from freezing; the use of running water for cooling purposes in the poorer districts; excessive use of water for lawns and gardens in residential neighborhoods.

Underground leakage in the distribution system is estimated to amount to 10 percent of the total pumpage or 95 million gallons per day. From 1931 through 1945 Chicago has done much to eliminate

underground leakage. The Division of Water Pipe Extension reported 18.99 million gallons per day of leakage stopped in the year 1945. Recent back-flow measurements made by the Section of Pumping Efficiency indicate that substantial volumes of water under certain operating conditions may flow from the distribution system back into the suction wells and possibly the supply tunnels.

Inspection to determine leakage and wastage is carried on continuously by the Division of Water Pipe Extension. In the years 1943 and 1944 the plumbing section found a total of 230,458 leaks at 117,248 premises inspected.

An intricate pressure control system, which has been in operation for about thirty years, conserves the supply of water by reduction of the grid pressure in sections adjacent to the pumping stations and makes available a better supply under increased pressure in sections distant from the stations. Continued efforts to reduce water wastage and per-capita consumption will aid present and future pressure conditions in the entire distribution system.

COMMENTS

The Chicago public water supply does not conform to all the requirements of a satisfactory public supply as set forth in the *Public Health Service Drinking Water Standards*, particularly with respect to freedom from turbidity, color, taste, and odor. It can meet these requirements only through proper filtration. Complete filtration treatment of the entire supply at a reasonable cost will require a reduction in the present excessive consumption of water. This reduction can be accomplished through the method of selling water on the basis of volume used rather than on an assessed basis, which may have little or no relation to the amount consumed.

Studies by the water department have shown that on metered domestic services the amount of water used per day per person averages 87 gallons, while on the unmetered services it is 140 gallons. For stores and flats these figures become 98 gallons and 568 gallons per capita per day, respectively. The lower figures represent the amount of water needed for all useful domestic purposes, all in excess of this amount represents waste plus a certain amount of "unaccounted" water.

The average per-capita consumption of water in Chicago in 1945 was 262.8 gallons per day. Because of Chicago's legitimate demands for a large volume of water, such as is required by industrial, manu-

facturing, and commercial establishments, a low per-capita rate should not be expected. However, the Bureau of Engineering, Department of Public Works, estimates in recent studies that metering would cut the consumption of water by 175,000,000 gallons per day. Such a reduction would lower the average daily per-capita consumption to about two hundred gallons.

FILTRATION The Lake Michigan water in the Chicago area is considered to be a "Group 3" water, according to the classification proposed by the United States Public Health Service.⁴ A Group 3 water has three properties which experience has indicated cannot be treated satisfactorily by chlorination alone, but for which filtration is required to make the water suitable for domestic use. These properties are (1) turbidity and color; (2) high or variable chlorine demand; (3) moderate degree of sewage pollution.

Because of the effect of the pollution upon the water at the Sixty-eighth Street and E. F. Dunne cribs in producing high coliform organism indices and disagreeable taste and odor conditions, the attention of both the officials and the citizens has been focused on this portion of the supply. Corrective action through the completion of the filtration plant will remedy this situation and furnish the consumers supplied by that plant with a clear, palatable water. The water-works officials are also aware of the need for filtration treatment of the water from the Dever, Four-Mile, and Wilson Avenue cribs, and are actively engaged in preparing plans to filter the water from these sources. A review of the laboratory results of examination of the raw water from these three cribs shows that at times the coliform group of organisms reaches rather high proportions, and there are periods of more than a month in duration when the average exceeds 50 per 100 milliliters. The United States Public Health Service recommends for such waters, rapid-sand filtration or its equivalent, together with continuous postchlorination. The periods of time during which the coliform organisms exceed the limit just mentioned are greater at the Wilson Avenue Crib than at either of the other two, perhaps as a result of pollution moving down the lake from the areas to the north of the crib.

The dry-weather sewage flow from the lake-shore towns in Cook County north of the city is discharged to the interceptors of the Sanitary District of Chicago and thus prevented from reaching the

⁴ U. S. Public Health Service, "Manual of Recommended Water Sanitation Practice," Part II, *Public Health Reports*, LVIII (Jan. 15, 1943), 69-111; Reprint No. 2,440, p. 24.

lake. However, excessive storm flow containing raw sewage is discharged at times into the lake through four relief outlets. North of the Cook County line in Illinois, the sewage of the lake-shore towns is discharged to the lake after partial treatment (about 40-percent purification). A study should be made to determine the sources of pollution now affecting the water at the Wilson Avenue Crib.

While the average yearly turbidity of the water from the two sources under consideration remains below 10, there are periods of considerable length when it is well above this amount. The presence of turbidity interferes with efficient bactericidal action by the chlorine. Turbidity, therefore, is another reason for filtering this water.

During the past few years there has been an increasing number of algae in the water at the cribs during certain periods of the year. At times the number reaches such proportions as to cause disagreeable tastes and odors in the water. These tastes and odors may be intensified in the future if the concentration of these organisms continues to increase. Chlorination as now practiced in Chicago has little effect upon the taste and odors produced by the algae, except perhaps in some cases to intensify them.

To summarize briefly, the three principal reasons for filtration of the water supply are: (1) a first line of defense against bacterial contamination; (2) removal of turbidity in order that the water may be at all times sparklingly clear; and (3) removal of tastes and odors at all times.

The Chicago City Council has already made available funds for the preliminary study, which have been augmented by state and Federal funds, and is planning additional filtration facilities. Preliminary studies and plans include within their scope the problems of both the North and the Central districts, with consideration being given to the construction of a single plant, as well as separate plants for each district. Under the most ideal conditions, several years will be required for the construction of the necessary treatment works. It is imperative, therefore, that there be no unnecessary delay in beginning construction work based on the studies and plans now under way.

LABORATORY SERVICES The health department laboratory is at present making all routine bacteriological examinations of samples of water collected by the water department from raw and treated water sources and from the distribution system. The number of samples collected meet the United States Public Health Service

standards as to population served and required number of samples per month. As long as the water department did not maintain a laboratory suitable for this type of work, the arrangement with the health department was satisfactory. Now that a water laboratory has been established at the South District Filtration Plant, however, it would be desirable to have these bacteriological examinations made in this laboratory so that all phases of the water department's laboratory work would be under the direct supervision of the officials responsible for the treatment of the water.

This transfer will relieve the health department of some of the laboratory load and permit more service in connection with other health department activities. The health department laboratory, however, should carry on the examination of a limited number of samples collected from the distribution system in order that it may ascertain the quality of the water being served. These samples should be collected by the health department independently of the water department, and the water department should be apprised of the findings. •

The combined number of samples collected from the distribution system and examined by both agencies should equal the number required by the *Public Health Service Drinking Water Standards*.

CHLORINATION Some of the factors that affect the efficiency of chlorination are: (1) the chlorine demand of the water; (2) turbidity; (3) temperature of the water; (4) the so-called pH, or hydrogen ion concentration; and (5) the qualifications of the personnel applying the chlorine and those supervising the application.

In turbid water which contains bacteria, these bacteria are partially shielded or protected by the fine particles from the action of the chlorine. Therefore, larger amounts of chlorine must be used for turbid water if its action is to be effective.

The temperature of the water affects the speed with which bactericidal action takes place, the time increasing as the temperature lowers. When this occurs with a water of high pH (alkalinity), the speed of the bactericidal action is reduced still further.

In addition to these factors governing the application of chlorine, there is another factor to be considered. When chlorine is added to water, part of it unites with any ammonia nitrogen present in the water to form another compound, known as chloramine. This compound has bactericidal properties, but is much slower in its disinfecting action than is free chlorine. When it is considered desirable

to extend the bactericidal action into the distribution system, ammonia compounds may be added with the chlorine to assure the formation of chloramines, a procedure that was followed in treating the water at the Dunne Crib.

A method of chlorination that has many advantages is known as "break point chlorination." In this method, sufficient chlorine is applied to satisfy all the demands of the water, including that of the ammonia nitrogen, and to provide for a residual of free chlorine. This free chlorine, uninhibited by chlorine attractive substances in the water, has an increased bactericidal action, exists throughout the distribution system, produces no chlorinous taste, and reduces tastes due to algae.

Experiments with the Lake Michigan water, mentioned earlier in this report, would indicate that this method of chlorine treatment is applicable. These studies should be continued, and if the earlier results are confirmed this method should be adopted in the Central and the North districts.

It would also appear desirable to establish a routine test for the chlorine demand of the water as it enters the cribs. This would allow about a 90-minute interval before chlorine is applied at the first shore station and would permit changes in the dosage if these were necessary. It would also be advisable to have such tests made routinely at the first shore station.

Information of public health significance relative to the use of chlorine alone as a method of treatment of Chicago's water supply was given in the 1940 *Annual Report* of the Division of Water Purification. The report pointed out that while statistically typhoid fever and amoebic dysentery in Chicago had reached an extraordinarily low point, the Division of Water Purification was not allowing itself to be lulled into a state of complacency by this record. It stated that because Chicago's sources of water supply are exposed to obvious sources of pollution and because chlorination is the only treatment of the water, only a thin crust of protection safeguards the public health of this city against water-borne-disease outbreaks. The division reported that this thin crust is made tough only by alertness and conscientious performance of duty by a limited number of trained men in the Division of Water Purification and the Division of Operation and that there are numerous potentialities for contamination, each awaiting a condition of strain when this crust may be broken through, possibly to cause an explosive water-borne outbreak.

The Division of Water Purification has, however, experienced difficulty in keeping this thin crust tough. The division is supposed to be in charge of the treatment of all water, while the Division of Operation is in charge of pumping stations. In reality the Division of Water Purification acts only as an advisory agency in the North and the Central districts. The Division of Operation employs men in the position of chlorine attendant who have had no technical training in water treatment. These men are employed and placed on duty by the Division of Operation and are responsible to the chief engineer of the pumping station. At the time of the Chicago-Cook County Health Survey the Division of Water Purification was not consulted concerning the appointment of these personnel, nor was it permitted to give the men proper training in the work that they were to perform before placing them on duty. If they are unable to make color comparisons because of color blindness or are otherwise unfitted for the work, these deficiencies can be found out only after they are on the job. It is then difficult to make a change.

The Division of Water Purification in 1945 attempted to establish a short course to train prospective chlorine attendant employees before assignment, but was not permitted to do so. It was mentioned earlier that the personnel information requested of city chlorine attendants was not received, although the commissioner of public works officially directed that it be supplied.

A letter from the president of Local 556 of the International Union of Operating Engineers to the city engineer, stating that the men had been instructed not to furnish the information, apparently demonstrates either that the union president did not take the trouble to inform himself regarding the details and importance of the chlorinating operations or that he is concerned chiefly with the protection of the men in their jobs, whether or not they are qualified. Proper selection, training, and supervision of chlorine attendants does not imply or require interference with their union activities or affiliation, nor should any shortsighted union policy so interpret such actions. Membership in the Operating Engineers Union, on the other hand, by itself, cannot be taken as a guarantee of qualification for the specialized job of chlorine attendant.

To secure maximum protection of the safety of the water supply, all equipment and personnel having to do with the treatment and chlorination of the public water supply should be placed directly under the supervision and the direction of the Division of Water

Purification. In addition to this change in personnel, the officials responsible for the safety of the water supply should maintain direct twenty-four-hour treatment control and supervision over the Central and the North districts, with technically trained employees.

OPERATION The fact that the water supply of Chicago does not meet all the requirements of the United States Public Health Service standards for water used on interstate carriers for drinking and culinary purposes was pointed out earlier. Carriers have been permitted to use the water provisionally, however, both because filtration of the water is planned and because past operating records indicate that the chlorinated city water supply has met U.S.P.H.S. standards as to bacteriological quality. Issuance of a provisional certificate was conditioned upon the maintenance by the city of rigid control over the chlorination processes through constant supervision by trained technical personnel. It was found that in the North and the Central districts, which provide 66 percent of the entire water supply, such rigid control was not maintained.

RECOMMENDATIONS

It is recommended that:

1. Direct twenty-four-hour chlorination control administered by personnel technically trained for this work shall be instituted immediately in the North and the Central districts.
2. All chlorination activities shall be transferred from the Division of Operation to the Division of Water Purification of the Department of Public Works.
3. The chlorine dosage capacities of the pumping station chlorination plants shall be increased to conform at least with the current *Manual of Recommended Water Sanitation Practice of the United States Public Health Service*.
4. The city shall proceed as rapidly as possible to construct filtration plants to treat the water supplied to the Central and the North districts.
5. All chlorine attendants shall be given thorough training in their duties by the Division of Water Purification and only those be retained on this work who demonstrate their ability satisfactorily to carry on their duties.
6. No new chlorine attendants shall be placed on duty until they have passed an inservice training course given under the direction of the Division of Water Purification.

7. Correction shall be required of known violations of the plumbing ordinances and frequent inspections be made of premises using raw river or lake water, or well water, to find and prevent future installations of cross-connections.

8. Studies of chlorination, including breakpoint chlorination, shall be continued and new methods, when found desirable, be adopted.

9. After the completion of the laboratory at the South District Filtration Plant, the routine bacteriological examination of water samples now being carried on by the health department shall be transferred to that laboratory, except that the health department shall make independent bacteriological examinations of samples from the distribution system as a check on the water supply.

10. The health department shall exercise greater control over the private-well supplies.

11. By mutual agreement all activities relating to chlorination of water by the Chicago Park District shall be placed directly under the technical supervision of the Division of Water Purification of the Department of Public Works and the Park District operators be assigned to chlorination duties only after they have been trained thoroughly by the division.

WATER SUPPLIES IN COOK COUNTY

by *Leonard B. Dworsky*

WATER SUPPLIES in Cook County (exclusive of Chicago) have been surveyed in two sections; (1) water supplies in incorporated municipalities and (2) water supplies in rural areas. The latter include all individual dwelling, school, institutional, and industrial water supplies and semi-public water supplies provided by private organizations in a number of subdivisions in the unincorporated areas of Cook County.

MUNICIPAL WATER SUPPLIES

Of the 606,185 people living in the 89 incorporated municipalities in Cook County outside Chicago, 599,915, or 99 percent, depend upon 77 individual municipal water-supply facilities, which provide approximately 73 million gallons of water daily through 144,000 water services. Over 98 percent of the services are metered. The average water consumption is approximately 122 gallons per person per day.¹

SOURCE AND TYPE OF TREATMENT The 89 municipalities are classified according to population in five groups (I-V) in Table 13. Table 14 indicates the source of water supply for each of these groups: (1) surface water (Lake Michigan), (2) ground water, (3) water supplied by other municipalities, and (4) no public water supply. It also shows the number of municipalities in each of the five groups according to the source of the water supply, and the population served. Forty-four of the 89 municipalities, with 64.8 percent of the total municipal population, obtain water through co-operation with other municipalities. Ground water is used by 28 municipalities, 26 of which fall into Groups I-III (under 10,000 population) and have only 11.5 percent of the total municipal population. Five

¹ Tabulations giving detailed statistics in regard to the water supply of each municipality are on file at the District Office of the U. S. Public Health Service (610 South Canal Street, Chicago 7, Illinois).

TABLE 13. DISTRIBUTION OF 89 MUNICIPALITIES BY POPULATION GROUPS

| Population Group Number | Population Range | Number Municipalities | Total Population | Percent Group Population to Total Population |
|-------------------------|------------------|-----------------------|------------------|--|
| 1 | 0-999 | 26 | 14,486 | 2.39 |
| 2 | 1,000-2,499 | 23 | 37,255 | 6.15 |
| 3 | 2,500-9,999 | 23 | 110,534 | 18.23 |
| 4 | 10,000-24,999 | 12 | 172,695 | 28.49 |
| 5 | 25,000 & More | 5 | 271,215 | 44.74 |
| Total | | 89 | 606,185 | 100.00 |

TABLE 14. SOURCE OF PUBLIC WATER SUPPLY BY POPULATION GROUPS, COOK COUNTY, ILLINOIS

| SOURCE OF PUBLIC WATER SUPPLIES | | | | | | | | | | |
|---|----|-------|---|------|---------------------------------|------|--|------|----------------------------------|-----|
| POPULATION GROUPS (Tot. pop.: 606,185) | | | SURFACE WATER (LAKE MICHIGAN) (Pop.: 104,805) | | GROUND WATER (Pop.: 102,425) | | SUPPLIED BY OTHER MUNC. (Pop.: 392,685) | | NO WATER SUPPLY (Pop.: 6,270) | |
| Groups | A | B | A | B | A | B | A | B | A | B |
| 1 | 26 | 2.4 | 0 | 0.0 | 7 | 0.7 | 7 | 0.7 | 12 | 1.0 |
| 2 | 23 | 6.1 | 0 | 0.0 | 9 | 2.3 | 14 | 3.8 | 0 | 0.0 |
| 3 | 23 | 18.2 | 2 | 1.6 | 10 | 8.5 | 11 | 8.1 | 0 | 0.0 |
| 4 | 12 | 28.5 | 2 | 4.9 | 2 | 5.4 | 8 | 18.2 | 0 | 0.0 |
| 5 | 5 | 44.8 | 1 | 10.8 | 0 | 0.0 | 4 | 34.0 | 0 | 0.0 |
| Total | 89 | 100.0 | 5 | 17.3 | 28 | 16.9 | 44 | 64.8 | 12 | 1.0 |

^a A: number of municipalities. B: percent of total population.

TABLE 15. TYPE OF TREATMENT, PUBLIC WATER SUPPLIES BY POPULATION GROUPS, COOK COUNTY, ILLINOIS

| TYPE OF TREATMENT | | | | | | | | | | |
|--|----|-------|---------------------------------|------|--------------------------------------|------|---|-----|--|----------------|
| POPULATION GROUPS ^a (Tot. pop.: 606,185) | | | NO TREATMENT (Pop.: 292,580) | | CHLORINATION ONLY (Pop.: 170,116) | | IRON REMOVAL, SOFTENING, AND CHLORINATION (GROUND WATER) (Pop.: 32,414) | | COAGULATION, SEDIMENTATION, FILTRATION, CHLORINATION (SURFACE WATER) (Pop.: 104,805) | |
| Groups | A | B | A | B | A | B | A | B | A | B ^b |
| 1 | 26 | 1.4 | 12 | 1.2 | 2 | 0.2 | 0 | 0.0 | 0 | 0.0 |
| 2 | 23 | 6.1 | 20 | 5.5 | 3 | 0.6 | 0 | 0.0 | 0 | 0.0 |
| 3 | 23 | 18.2 | 13 | 9.5 | 4 | 3.5 | 4 | 3.6 | 2 | 1.6 |
| 4 | 12 | 28.5 | 6 | 13.4 | 3 | 8.5 | 1 | 1.7 | 2 | 4.9 |
| 5 | 5 | 44.8 | 2 | 18.7 | 2 | 15.3 | 0 | 0.0 | 1 | 10.8 |
| Total | 89 | 100.0 | 53 | 48.3 | 14 | 28.1 | 5 | 5.3 | 5 | 17.3 |

^a Includes 1 percent of the population in 12 municipalities not provided with a municipal water supply.

^b A: number of municipalities. B: percent of total population.

municipalities use Lake Michigan water; 12 have no public water supply.

The type of treatment provided by municipalities is shown in Table 15. The fact that 45 of the 53 municipalities without treatment facilities have populations under ten thousand indicates, at least in part, that the major emphasis in expansion of treatment facilities should be directed toward these localities.

SANITARY QUALITY OF PUBLIC WATER SUPPLIES The 1946 *Public Health Service Drinking Water Standards* were used as a guide, in making an analysis of the sanitary quality of each of the 77 municipal water supplies in Cook County. The status of each water supply was determined in relation to each of the three parts of the U.S.P.H.S. standards: (1) as to *source and protection*, (2) as to *bacteriological quality* and (3) as to *physical and chemical characteristics*. The over-all character of the water supply, considering all items, was also determined. Table 16 summarizes the results of this analysis.

TABLE 16. PUBLIC WATER SUPPLIES COMPLYING WITH U. S. PUBLIC HEALTH SERVICE STANDARDS FOR DRINKING WATER, BY POPULATION GROUPS, COOK COUNTY, ILLINOIS

NUMBER AND PERCENT OF MUNICIPALITIES AND POPULATION SERVED BY PUBLIC WATER SUPPLIES

| POPULATION GROUPS (Tot. pop.: 606,185) | MEETING U.S.P.H.S. STANDARDS (Pop.: 139,069) | | | | NOT MEETING U.S.P.H.S. STANDARDS (Pop.: 460,846) | | | NO WATER SUPPLY (Pop.: 6,270) | | |
|---|---|----|------|------|---|------|------|----------------------------------|------|----------------|
| | A | B | C | | A | B | C | A | B | C ^a |
| Groups | A | A | B | C | A | B | C | A | B | C ^a |
| 1 | 26 | 2 | 2.2 | 0.2 | 12 | 13.5 | 1.1 | 12 | 13.5 | 1.0 |
| 2 | 23 | 2 | 2.2 | 0.4 | 21 | 23.6 | 5.7 | 0 | 0.0 | 0.0 |
| 3 | 23 | 7 | 7.8 | 6.6 | 16 | 18.0 | 11.6 | 0 | 0.0 | 0.0 |
| 4 | 12 | 2 | 2.2 | 4.9 | 10 | 11.2 | 23.6 | 0 | 0.0 | 0.0 |
| 5 | 5 | 1 | 1.1 | 10.8 | 4 | 4.5 | 33.9 | 0 | 0.0 | 0.0 |
| Total | 89 | 14 | 15.5 | 22.9 | 63 | 70.8 | 75.9 | 12 | 13.5 | 1.0 |

^a A: number of municipalities.

B: percent of total municipalities.

C: percent of total population.

The table indicates that 63 of the 77 municipalities with public water-supply facilities provided a water supply that *did not* meet all the U.S.P.H.S. standards. These 63 municipalities have 75.9 percent of the total municipal population. Forty of the 63 use Chicago water, which the United States Public Health Service has approved only provisionally.

The table further shows that 50 of the 63 municipalities are small

places, having less than ten thousand population. In this connection it is worth noting that during the period 1920-36 all water-borne-disease outbreaks occurred in municipalities with populations of ten thousand or less.² These 311 outbreaks accounted for 77.9 per cent of all the outbreaks in the United States during this period.

RESPONSIBILITY FOR SANITARY-CONTROL MEASURES Certain responsibilities for providing a water supply safe for drinking in the seventy-seven municipalities in Cook County rest with three governmental agencies; (1) the state of Illinois, (2) the county of Cook, and (3) each specific municipality (or water company) providing a public water supply. The form and extent of this responsibility is derived from the Illinois state statutes.

State of Illinois.—The state statutes place in the state department of public health broad power over the people residing in the state. These broad powers are indicated by the following:³

The State Department of Public Health shall have the general supervision of the interests of the health and lives of the people of the State . . . shall have authority to make such rules and regulations and such sanitary investigations as may from time to time be necessary for the preservation and improvement of the public health . . .

The statutes further require all local boards of health or any official of subordinate governments to enforce the rules and regulations that may be adopted by the state department of public health.

The powers and duties of the state department of public health, as set forth in Section 55 of the Civil Administrative Code of Illinois,⁴ indicate that the state health department shall have the power:

3. To act in supervisory capacity relative to the sanitary quality and adequacy of proposed and existing public water supplies, water treatment and purification works . . . and to prepare and enforce rules and regulations relative to the installation and operation of public water . . . works . . . so that public water supplies will be of satisfactory sanitary and mineral qualities for drinking and general domestic use . . . to determine standards of purity of drinking water . . .

4. To make such sanitary investigations as it may, from time to time, deem necessary for the preservation and improvement of the public health . . .

² Abel Wolman and Arthur E. Gorman, *The Significance of Waterborne Typhoid Fever Outbreaks, 1920-1930*, Baltimore, Md., Williams and Wilkins Company, 1931; Arthur E. Gorman and Abel Wolman, *Water-borne Outbreaks in the United States and Canada and Their Significance*, New York, American Water Works Association, 1939.

³ *General Information and Laws of Illinois Relating to Public Health*, compiled 1940.

⁴ *Laws of Illinois*, Sixty-fourth General Assembly 1945: pp. 1,654-55.

6. To maintain chemical, bacteriological . . . laboratories, to make examinations of . . . water . . . and other substances . . . for the protection of the people of the State.

In recognition of its responsibilities, the Illinois Department of Public Health, through its Division of Sanitary Engineering, has maintained a program of supervision over the public water supplies in the state by: (1) reviewing all plans for additions to existing facilities and for new facilities; (2) routine inspections of all public water supplies at least annually and frequent routine examinations of water samples; (3) requesting receipt of monthly operation reports for all treated supplies; (4) holding meetings for waterworks' operators in various sections of the state and a short course for operators; (5) issuance of quarterly publications devoted to waterworks' problems; (6) issuance of certificate of competency to water treatment plant operators.

The Illinois Department of Public Health cannot make it mandatory for municipalities which provide a public water supply to comply with any recommendations which might be issued by the department after a supervisory inspection of their water-supply systems. It has, however, been the policy and practice of the Division of Sanitary Engineering to require that all plans for the construction of new water systems or changes to existing systems be submitted for review. Letters of approval are granted when such plans meet the requirements of the Illinois Department of Public Health.

Cook County.—The state statutes provide that boards of health of counties shall have the power, "to do all acts, make all regulations which may be necessary or expedient for the promotion of health or the suppression of disease." County boards of health are further enjoined to enforce the rules and regulations of the state department of public health. Control measures are carried out in a co-operative manner, the county generally acting as an agent of the state in the absence of specific county rules and regulations. In Cook County the health department undertakes local enforcement and implementation of the state health department's program for sanitary control over public water supplies.

The Individual Municipality.—The primary responsibility for sanitary control over a municipal water supply rests with each municipality (or water company). Lack of authoritative action on the part of superior governmental agencies does not relieve the individual municipality of any responsibility. The Illinois statutes which

provide for the incorporation of cities and villages also grant broad powers to these local governments, the same powers, in fact, as those granted to county boards of health. Detailed powers relating to construction, operation, and maintenance of waterworks are set forth in the statutes. Authority to issue bonds, collect taxes, apply special assessments, and make other financial arrangements are among the powers granted to individual municipalities. Of special importance is the provision in the Cities and Villages Act which grants the power "to provide for the cleansing and purification of water" and "to prevent the pollution of water."

Thus, individual municipalities are given power not only to construct, operate, and maintain waterworks; but also to maintain the purity of the water and to acquire the resources with which to do necessary work. Courts of law in many parts of the country have maintained judgments against municipalities for many thousands of dollars when evidence indicated that the municipality did not exercise reasonable care in providing a water supply safe for drinking.

In 1929 an act of the New York Legislature authorizing the city of Olean to issue bonds in the amount of \$350,000 was required to enable that city to pay claims resulting from a water-borne typhoid fever epidemic. In Everett, Washington, three persons each were awarded \$6,000 damages against the city in compensation for sickness caused during a typhoid epidemic. The court ruled that the city as a dealer of water could not evade its responsibility to produce a safe product.

According to an opinion of the Attorney General of Illinois, under date of January 28, 1926, cities, water companies, and individuals supplying water for general use are liable for injuries to health resulting from contamination of such waters, if the owners or operators of such water supplies have not exercised reasonable care in discovering and preventing possible contamination of the supplies or have not given due warning to the consumers that the supplies are subject to dangerous contamination.

SANITARY SURVEYS OF MUNICIPAL WATER SUPPLIES In determining whether a water supply complies with the portion of the United States *Public Health Service Drinking Water Standards* in regard to source and protection, a sanitary survey of the physical features of the water-supply system is essential. The water-supply system is defined to "include the works and auxiliaries for collection, treatment and distribution of the water from the source of supply to the

free-flowing outlet of the ultimate consumer." The finding of sanitary defects or health hazards usually provides sufficient cause for non-approval of the water supply.

"Sanitary defect" means any faulty structural condition, whether of location, design, or construction of water collection, treatment, or distribution works, which may regularly or occasionally (a) cause the water supply to be contaminated from an extraneous source, including dual supplies, by-passes, cross-connections, or interconnections (backflow connections), or (b) cause failure in satisfactory purification.

Health hazard means any faulty operating condition including any device or water-treatment practice which, when introduced into the water-supply system, creates or may create a danger to the well-being of the consumer. Typical examples of sanitary defects are: fissures or open faults in strata overlying water-bearing formations; casing of tubular wells leaky, or not extended to sufficient depth, or not extended above ground or floor of pump room; collecting well or reservoir subject to back-flow of polluted water through improper drain; open annular space between suction pipe and casing allowing contamination to enter well; well-pit drains connected to sewers.

The reliability of the data collected during a sanitary survey depends largely upon the competence of the person by whom the survey is made. The qualifications which constitute "competence" cannot be defined precisely, but in general the person making the survey should have received a technical education in the basic sanitary sciences equivalent to that given in a course in sanitary engineering in a recognized college of engineering or school of public health; he should have a broad knowledge of the sanitary features and physical facts concerning water supplies for potable use, and he should understand the essential features of water purification plants, their operation, and method of testing.

The personnel employed by the Illinois Department of Public Health and the Cook County Department of Public Health to carry out the duties of supervision of public water supplies meet with the qualifications just outlined and are competent to perform the duties required. Few of the seventy-seven municipalities maintaining a public water supply have personnel competent by training or experience to undertake comparable surveys.

The number and percent of the municipalities in the five population groups in which the public water supply does or does not meet

U. S. Public Health Service standards as to source and protection are presented in Table 17, together with the number and the percent in each group which have no water supply. Any municipality found to have sanitary defects in its water system was classified "unsatisfactory" as to source and protection. Data as to the presence of sanitary defects in the 77 public water supplies in Cook County from reports on file in the Illinois and Cook County health departments were used in preparing this table. Check inspections were made by survey personnel when it was considered necessary. The

TABLE 17. SOURCE AND PROTECTION OF PUBLIC WATER SUPPLIES BY POPULATION GROUPS, COOK COUNTY, ILLINOIS

| PUBLIC WATER SUPPLIES | | | | | | | | | | |
|---|----|---|------|------|---|------|------|-------------------------------------|------|----------------|
| POPULATION GROUPS (Tot. pop.: 606,185) | | UNSATISFACTORY AS TO SOURCE AND PROTECTION (Pop.: 460,846) | | | SATISFACTORY AS TO SOURCE AND PROTECTION (Pop.: 139,069) | | | NO WATER SUPPLY (Pop.: 6,270) | | |
| Groups | A | A | B | C | A | B | C | A | B | C ^a |
| 1 | 26 | 12 | 13.5 | 1.1 | 2 | 2.2 | 0.2 | 12 | 13.5 | 1.0 |
| 2 | 23 | 21 | 23.6 | 5.7 | 2 | 2.2 | 0.4 | 0 | 0.0 | 0.0 |
| 3 | 23 | 16 | 18.0 | 11.7 | 7 | 7.9 | 6.5 | 0 | 0.0 | 0.0 |
| 4 | 12 | 10 | 11.2 | 23.6 | 2 | 2.2 | 4.9 | 0 | 0.0 | 0.0 |
| 5 | 5 | 4 | 4.5 | 34.0 | 1 | 1.1 | 10.8 | 0 | 0.0 | 0.0 |
| Total | 89 | 63 | 70.8 | 76.1 | 14 | 16.6 | 22.8 | 12 | 13.5 | 1.0 |

^a A: number of municipalities.

B: percent of total municipalities.

C: percent of total population.

data show that 63, or 70.8 percent, of the 89 municipalities are provided with water by systems having sanitary defects. The data further indicate that 50 of the 63 water systems that do not meet the standards as to source and protection belong to the group of municipalities with populations under ten thousand.

The examples of water-borne-disease outbreaks and their causes, presented in Table 18, illustrate what may happen when a water system is unsatisfactory as to source and protection ("having sanitary defects") and provide evidence that the standards do not represent mere theoretical considerations.

Obviously, therefore, many municipal officials are not fulfilling their responsibilities to the communities involved or exercising the "reasonable care" required to safeguard the public water supply, and through it the public health.

TABLE 18. EXAMPLES OF WATER-BORNE OUTBREAKS OF DISEASE IN PUBLIC WATER SUPPLIES

| NUMBER | NAME | POPULATION | YEAR | TYPHOID FEVER | | DYSENTERY CASES | SOURCE OF WATER | CAUSES OF OUTBREAK AND GENERAL REMARKS |
|--------|--|------------|--------------|---------------|--------|-----------------|-----------------|---|
| | | | | Cases | Deaths | | | |
| 1 | Santa Ana, Calif. | 30,000 | 1924 | 369 | 28 | 10,000 | Well | Sewer drain from air-lift well allowed sewage to flow over well top. |
| 2 | Bloomington, Ill. | 28,725 | 1920 | 200 | 24 | 1,000 | Drift well | Cross connection with polluted industrial water supply. |
| 3 | Chicago, Ill. | 2,701,705 | 1923 | 150 | 15 | Many | Lake | Inadequate chlorination of unfiltered water. |
| 4 | Salem, Ohio | 10,305 | 1920 1921 | 884 | 27 | 7,000 | Drilled well | Water flowing through vitrified pipe collection line became polluted by adjacent sewer. |
| 5 | Jonesboro, Ill. | 1,090 | 1927 | 23 | | | Rock well | Underground contamination through creviced limestone. |
| 6 | Shirley, Ind. | 1,200 | 1927 | | | 250 | Drilled well | Open annular space between suction pipe and casing. Well pit drained to sewer. Sewer backed up. |
| 7 | Manteno State Hospital, Manteno, Ill. | 6,200 | 1939 | 453 | 60 | | Drilled well | Underground contamination through creviced limestone. |
| 8 | Newton, Kans. | 11,048 | 1942 | | | 3,000 | Drilled well | Sewage entering water system through frost-proof hydrants and water closet valves. |

BACTERIOLOGICAL CONTROL OF MUNICIPAL WATER SUPPLIES

The bacteriological examination of water supplements the sanitary survey in determining the sanitary quality of a public water supply. It indicates only the condition of the water supply at the time the sample was obtained. The results of bacteriological examination cannot be taken as assurance of the continued safety and satisfactory quality of the water supply if the sanitary survey shows the presence of sanitary defects in the water-supply system. Thus, the elimination of defects which might allow contamination to enter the water supply is of primary importance.

Frequency of Sampling.—Since the bacteriological examination of water indicates only the sanitary quality of the water at the time of collection of the sample, it is important that a sufficient number of samples be collected at frequent intervals to ensure adequate control and reasonable care as to the safety of the water. This procedure is especially necessary for water supplies known to have sanitary defects or health hazards. The U.S.P.H.S. standards "as to bacteriological quality" require that the samples be collected from the distribution system each month in accordance with a graph provided in the standards. The number required by the graph is based upon the relationship to population, which is indicated approximately by the following tabulation:

| <i>Population Served</i> | <i>Minimum Number Samples per Month</i> |
|--------------------------|---|
| 2,500 and under | 1 |
| 10,000 | 7 |
| 25,000 | 25 |
| 100,000 | 100 |
| 1,000,000 | 300 |
| 2,000,000 | 390 |
| 5,000,000 | 500 |

Supervision of the bacteriological examination of public water supplies is maintained by the Illinois and Cook County departments of public health on a co-operative basis. A routine procedure has been set up which enables the Chicago laboratory of the Illinois Department of Public Health to ship sample bottles at specified intervals to each of the municipalities maintaining a public water supply. The samples are collected by a local official: the waterworks superintendent, the sanitary inspector, the chief of police, or some other official, depending upon the individual municipality. This

official in turn mails the samples back to the laboratory, which makes the examination and submits the laboratory reports to the Cook County Department of Public Health. These reports are reviewed in conjunction with the known facts about the water-supply system revealed by sanitary surveys and previous bacteriological examinations. The results of the bacteriological examination and an interpretation as to the safety of the water supply for drinking purposes is then sent to the municipal officials by the county health department.

Excellent co-operation is maintained between the state laboratory and the county health department. The laboratory reports by telephone to the county health department in regard to samples that indicate the presence of contamination. Where deemed necessary, the county health department immediately arranges for the collection of "repeat" samples from the municipality concerned in order to maintain adequate control. Necessary action to safeguard the water supply is taken if "repeat" samples continue to show the presence of contamination.

This procedure is maintained for all water supplies except those that undergo treatment other than simple chlorination. For treated ground-water supplies, supervision of bacteriological examination is provided from the central office of the Illinois Department of Public Health in Springfield, Illinois.

This supervision is not as efficient as that maintained in co-operation with the county health department because of the distance between Springfield and the local municipality and the resulting time lag. As an aid in maintaining adequate control over these water supplies, additional bacteriological examinations are carried on at each of the water-purification plants at Evanston, Wilmette, Winnetka, Kenilworth, and Glencoe.⁵

Table 19 shows the number and the percent of the municipalities which collect from their distribution systems the minimum number of samples per month required by the U.S.P.H.S. standards. The computation of the number of samples examined each month included not only those examined by the state laboratory but also those examined by each local health department or water plant laboratory, as well as samples of Chicago water occasionally examined by the Chicago Division of Water Purification.

The statistics in Table 19 indicate that only eighteen municipali-

⁵ See Chapter 20.

TABLE 19. MUNICIPALITIES MEETING U.S.P.H.S. MINIMUM STANDARDS FOR BACTERIOLOGICAL EXAMINATION OF WATER

| POPULATION GROUP NUMBERS | TOTAL NUMBER MUNICIPALITIES | MUNICIPALITIES MEETING U.S.P.H.S. MINIMUM STANDARDS | |
|--------------------------------|-----------------------------------|--|------------|
| | | Number | Percentage |
| 1 | 26 | 4 | 4.5 |
| 2 | 23 | 7 | 7.8 |
| 3 | 23 | 5 | 5.6 |
| 4 | 12 | 2 | 2.2 |
| 5 | 5 | 0 | 0.0 |
| All types | 89 | 18 | 20.1 |

ties, or 20.1 percent of the eighty-nine in Cook County, meet the U.S.P.H.S. standards as to the number of samples collected. It is apparent, therefore, that additional and more adequate supervision is necessary to ensure water supplies safe for drinking.

Results of Bacteriological Examination.—If the results of the bacteriological examination are to be used to assist in forming a judgment as to the sanitary quality of a water supply, it is desirable that these results be based on at least the minimum number of samples required by the standards. The results of all the analyses are then tabulated in conformance with the method noted in the standards. If the tabulation shows that the water supply meets the standards it can be assumed generally that it is safe for drinking, provided the sanitary survey has not shown the presence of sanitary defects or health hazards in the water-supply system.

Table 20 shows the bacteriological quality of public water supplies

TABLE 20. BACTERIOLOGICAL QUALITY OF PUBLIC WATER SUPPLIES BY POPULATION GROUPS IN COOK COUNTY, ILLINOIS

| PUBLIC WATER SUPPLIES | | | | | | | | | | |
|---|----|---|------|------|---|-----|-----|-------------------------------------|------|----------------|
| POPULATION GROUPS (Tot. pop.: 606,185) | | MEETING U.S.P.H.S. BACTERIOLOGICAL STANDARDS (Pop.: 590,709) | | | NOT MEETING U.S.P.H.S. BACTERIOLOGICAL STANDARDS (Pop.: 9,206) | | | NO WATER SUPPLY (Pop.: 6,270) | | |
| | | A | B | C | A | B | C | A | B | C ^a |
| Groups | | | | | | | | | | |
| 1 | 26 | 12 | 13.5 | 1.2 | 2 | 2.2 | 0.2 | 12 | 13.5 | 1.0 |
| 2 | 23 | 21 | 23.6 | 5.5 | 2 | 2.2 | 0.7 | 0 | 0.0 | 0.0 |
| 3 | 23 | 22 | 24.7 | 17.6 | 1 | 1.1 | 0.7 | 0 | 0.0 | 0.0 |
| 4 | 12 | 12 | 13.5 | 28.5 | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 |
| 5 | 5 | 5 | 5.7 | 44.7 | 0 | 0.0 | 0.0 | 0 | 0.0 | 0.0 |
| Total | 89 | 72 | 81.0 | 97.5 | 5 | 5.5 | 1.6 | 12 | 13.5 | 1.0 |

^a A: number of municipalities.

B: percent of total municipalities.

C: percent of total population.

arranged according to population groups. The table is based on the total number of examinations made upon samples collected from the distribution system of each municipality operating a public water supply for the year 1945. With the exception of five, all water supplies complied with that portion of the bacteriological standards which relates to the presence of the coliform group of organisms. It may be well to recall at this point the importance of the sanitary survey in forming a judgment as to the sanitary quality of a water supply.

PHYSICAL AND CHEMICAL CHARACTERISTICS The forty municipalities receiving Chicago water do not serve water that meets the U.S.P.H.S. drinking-water standards as to physical characteristics.⁶

All other water supplies generally meet the required standards as to physical and chemical characteristics. Water supplies taken from the ground are usually hard and often contain iron in amounts sufficient to stain plumbing fixtures and laundry. Although these are undesirable characteristics, the standards indicate only preferable amounts of hardness and iron. An excess over the amounts preferred does not constitute ground for nonapproval of the water supply.

CHLORINATION REQUIREMENTS AND CONTROL Chlorination requirements for the municipalities in Cook County depend upon the source of their water supplies. The three sources of supply indicated in Table 14 are: surface water from Lake Michigan, water supplied by other municipalities, and ground water.

Surface Water.—The need for chlorination of Lake Michigan water is readily understandable, and chlorination is provided by all the municipalities using this source. Of the six municipalities, including Chicago, which obtain their water directly from Lake Michigan, all except Chicago provide, in addition to chlorination, complete purification systems including coagulation, sedimentation, and filtration. The margin of safety maintained in most of the forty municipalities which obtain their water from the Chicago system is less than that provided by Chicago, because the supervision of their distribution systems and the control precautions maintained are inadequate.

Unless the municipalities using Chicago water make routine control tests which indicate the presence of chlorine, they are without knowledge as to the safety of the water they serve to their residents and are completely dependent upon Chicago for the safety of their

⁶ For a detailed discussion of this point see Chapter 2.

water supplies. The discussion in the preceding chapter makes it clear that such dependence is not fully justified. Moreover, even if they maintained control tests, that procedure would not be sufficient. Unless chlorine facilities of their own are maintained, the officials responsible will be unable to make the adjustments needed when the tests show the absence of chlorine in the water or when an emergency or some other condition makes greater amounts of chlorine necessary.

Chicago also recognizes the desirability of having each municipality which receives water from Chicago rechlorinate this water. In drafting new contracts or renegotiating old contracts for furnishing water, Chicago requires that each municipality agree to maintain a safe water supply throughout its system and to provide, maintain, and operate at all times during the period of the contract chlorinating equipment or some process equally effective in health protection.

The four municipalities which obtain surface water from another system use water which has been treated completely, but their control equipment is not as satisfactory as that maintained by the system from which their water is obtained.

Ground Water.—Twenty-eight municipalities receive water from the ground by means of wells. All the wells penetrate into the Niagaran limestone formations, which are cracked, creviced, and filled with solution channels through which contamination can travel for long distances without having the benefit of natural filtration which other rock formations or soils could provide.

The Illinois Department of Public Health, in co-operation with the Illinois State Geological Survey, has adopted the policy that "any municipal water supply obtained from a limestone formation must be continuously and adequately chlorinated regardless of drift thickness or safety from abandoned wells, cesspools, outcrop, etc." The survey's findings are in complete accord with this policy.

Sanitary Defects.—A need for chlorination exists over and above the basic requirement of treating the water as it is taken from Lake Michigan or from unsatisfactory ground-water sources. Contamination may enter the distribution system through the existence of sanitary defects in the system. If contamination occurs, the only temporary safeguard is the presence of chlorine in every part of the distribution system. The routine presence of small quantities of chlorine in a system should not, however, be construed as a substitute for elimination or correction of sanitary defects in safeguarding a water

supply. It will not protect the supply against the introduction of appreciable quantities of contaminated material if sanitary defects such as the following are present:

Existence of cross-connections between primary supply and secondary supply of questionable safety at any point in the distribution system; return to the system of any water used for cooling, hydraulic operations, or other industrial purposes; intermittent service, resulting in reduced or negative pressures in the distribution system, sizes of mains and laterals inadequate for preventing negative pressures, presence of dead ends permitting reduced or negative pressures; lack of suitable plumbing ordinances prohibiting the use of back-flowing toilet or sink fixtures, or the use of storage tanks connected directly to sanitary fixtures without proper vacuum breaker inlets, or prohibiting unsafe cross-connections between potable and non-potable water supplies in private premises; new connections of pipe line joined to the system without prior disinfection of pipes; improper location of water pipes in relation to sewers, storm water drains, and other potential sources of pollution.

The replacement of broken water mains or the installation of new mains without disinfection is commonly practiced. An individual would not think of drinking from a glass that had probably traveled hundreds of miles in a dirty railroad car, was stored in the open where rats or other rodents and vermin could have access to it, and was rolled in the dirt, grime, muck, and filth that is present when a ditch is dug to install a water main. Yet, the same individual unknowingly drinks water that has passed through water mains subjected to similar conditions. It cannot be denied that unless adequate precautions are taken, this situation constitutes a serious hazard.

The applications of well-known and/or easily understood principles can eliminate these hazards. Many of these principles are followed in Chicago in setting up controls. Such controls are completely lacking in most of the municipalities which utilize Chicago water or water from other municipalities with purification plants. In the few places which have established controls, they are far less adequate than those maintained for the Chicago water supply.

Table 21 presents the number and the percent of municipalities (a) in need of chlorination facilities, (b) with such facilities, (c) with chlorination facilities for which adequate controls are maintained, and (d) with no water supply.

As part of its responsibility in supervising the water-supply sys-

TABLE 21. CHLORINATION FACILITIES AND ADEQUACY OF CONTROL IN PUBLIC WATER SUPPLIES BY POPULATION GROUPS IN COOK COUNTY, ILLINOIS

| MUNICIPALITIES WITH SPECIFIED CHARACTERISTICS ^a | | | | | | | | | |
|--|----------------------------------|-----|------------|-----|------------|-----|------------|-----|------------|
| GROUP NUMBER | TOTAL NUMBER EACH GROUP | A | | B | | C | | D | |
| | | No. | Percentage | No. | Percentage | No. | Percentage | No. | Percentage |
| 1 | 26 | 14 | 15.7 | 3 | 3.4 | 1 | 1.1 | 12 | 13.5 |
| 2 | 23 | 23 | 25.8 | 2 | 2.2 | 1 | 1.1 | 0 | 0.0 |
| 3 | 23 | 23 | 25.8 | 9 | 10.1 | 7 | 7.8 | 0 | 0.0 |
| 4 | 12 | 12 | 13.5 | 6 | 6.7 | 2 | 2.2 | 0 | 0.0 |
| 5 | 5 | 5 | 5.7 | 3 | 3.4 | 2 | 2.2 | 0 | 0.0 |
| Total | 89 | 77 | 86.5 | 23 | 25.8 | 13 | 14.4 | 12 | 13.5 |

^a A: in need of chlorination facilities.

B: providing chlorination facilities.

C: maintaining adequate control over chlorination.

D: having no water supply.

tems in the state, the Illinois Department of Public Health has maintained a continuous program and established rules and regulations which if enforced by local authorities would result in elimination of hazardous conditions in their water supplies. The responsible municipal organizations have, however, lacked both power and competent staff to enforce these state regulations. In Cook County the establishment of a department of public health has remedied this situation to a certain extent, but adequate supervision can be maintained only if the county health department is able to employ an adequate staff.⁷

All municipalities should provide chlorination facilities and make provision for adequate control of the chlorination process. This is the only practical method of ensuring water supplies safe for drinking under present conditions: seventy-seven individual water systems operated by seventy-seven separate organizations, each responsible for the safety of its own water supply. The inefficiency of having each municipality in a large metropolitan area provide individual water-supply and treatment facilities is, however, clearly recognized. The organization of a single governmental unit responsible for the production and distribution of water for all the municipalities in Cook County would simplify the problem immeasurably. This plan is discussed in detail in Chapter 3.

ADEQUACY OF MUNICIPAL WATER SUPPLIES The absence of

⁷ Personnel recommendation for the Cook County Department of Public Health are given in Chapter 42.

sound engineering planning for the needs of the forty municipalities furnished water from the Chicago system has resulted in lack of adequate pressure and an insufficient supply of water for many of these suburban communities. The depletion of the ground-water resources in the Chicago region is a serious problem for the twenty-eight municipalities in the county that utilize ground water as a source of supply.

RURAL WATER SUPPLIES

The application of the term "rural" to the water supplies in the unincorporated area of Cook County is not an entirely accurate definition in that parts of the area are highly urban. It is estimated that in 1946 the population totaled 81,485 and that 80 percent of this population live in communities similar to those existing within incorporated areas and lack only a political boundary to come within the definition of "urban areas."

The term "rural" lacks conciseness also because the rural water supply is used by so many people who live outside the area. It is estimated that approximately 164,000 people—most of them nonresidents—daily visit the country clubs, forest preserves, restaurants, tourist trailer camps, and race tracks located within this area. Table 22 presents estimates of the total seasonal attendance and the average daily attendance of these places in a year.

TABLE 22. ESTIMATE OF NONRESIDENTS USING RURAL WATER-SUPPLY FACILITIES IN COOK COUNTY

| <i>Type</i> | <i>Number of Units</i> | <i>Estimated Seasonal Attendance</i> | <i>Estimated Average Daily Attendance</i> |
|-------------------------|---------------------------|--------------------------------------|---|
| County clubs | 50 | 1,500,000 | 6,000 |
| Forest preserves | 36,000 acres ^a | 500,000 | 1,400 |
| Restaurants | 600 | 150,000 ^b | 150,000 |
| Tourists' trailer camps | 34 | 2,000 ^b | 2,000 |
| Race tracks | 4 | 1,650,000 | 4,600 |
| Total | | | 164,000 |

^a 275 wells.

^b One day.

Since people from incorporated areas who use rural water outnumber the rural population almost two to one, it is evident that the safety of these water supplies is not solely a problem for residents of the rural area. It is, in fact, truly a community problem for the entire Chicago region.

SOURCE OF RURAL WATER SUPPLIES Water in the rural area near Chicago is obtained mainly from three rock formations; Niagaran limestone, St. Peter sandstone, and the Galesville sandstone. The majority of the private wells in the county obtain their water from the cracked and fissured limestone which varies in depth from visual out-croppings to 200 feet.

A common fault of many of the larger wells which obtain water from Galesville or St. Peter sandstone is that the well casing does not extend, in all instances, through the Niagaran limestone. As a result, the solution channels in the limestone provide a source through which polluted water may seep into the wells. The water level of other limestone wells in that area may be affected also. An excellent example of the second possibility is provided by the experience of a large subdivision supplied by individual wells which was located near a large wartime industrial plant on the west side of Chicago. The plant drilled a well to be used for industrial purposes through a limestone solution channel from which many of the wells in the subdivision obtained their water. As a result, many of the individual wells "went dry." They continued dry until the industrial plant had its well cased through the limestone and thus cut off the flow of water from the solution channel into the industrial well.

The Illinois State Water Survey studied some 2,138 wells located in Cook County outside Chicago. Of this number, 110 were used by industries, 62 by municipalities, and 1,812 by private homes. It was also found that 1,862 of these wells drew water from limestone or from the glacial drift, 23 from St. Peter sandstone, 65 from Galesville sandstone, and 34 from Mt. Simon, another type of sandstone. It was estimated that a total of 4.03 million gallons per day was taken from the limestone and 26.08 million gallons per day from the sandstone.

TYPES OF RURAL WATER SUPPLIES *Private Homes.*—The majority of rural homes in Cook County have drilled limestone wells; dug wells are looked upon with disfavor, and the only driven wells on record are in a small area on the outskirts of Elgin in the northwest part of the county. Information obtained in regard to 1,261 privately drilled wells in several townships indicated that the average depths by townships varied from 84 feet in some to 220 feet in others.

The average private limestone well in the county is drilled and cased until limestone is reached. The driller then continues to drill into the limestone until a water-bearing channel is reached. In gen-

eral, if nearby sources of pollution are nonexistent the bacterial quality of these Niagaran limestone water supplies has been satisfactory if the well was properly constructed, adequately chlorinated to remove construction contamination, and adequately sealed.

As a result of the rapid development of the unincorporated area, considerable construction of new single-family dwellings has taken place in recent years. Many owners of existing homes have improved their facilities. The Cook County Zoning Bureau estimates that since 1940 approximately seven thousand new wells for individual home use have been constructed. The great majority are in closely developed subdivision areas.

This practice is not desirable because each home with an individual well usually also has individual septic tank and subsurface tile seepage systems. The problem can be solved through: (a) the development of a metropolitan water system with power to construct, operate, and maintain water systems, and to apportion the cost for such systems equitably among its users; (b) the enactment by the Board of Commissioners of Cook County, under the powers granted to counties by the state legislature, of reasonable rules and regulations for the control of new subdivisions not yet platted in the County Map Department. These regulations should include, among other items, a provision requiring community water and sewage systems instead of individual home systems; (c) incorporation of the built-up communities or annexation to existing municipalities in order to obtain the required facilities; (d) organization under the law authorizing townships to construct, operate, maintain, and purchase water and/or sewerage systems (this procedure is not recommended for Cook County).

Tourist and Trailer Camps.—Since the war, the problem of tourist and trailer camps has become an item of major importance. Of 51 camps in rural Cook County which have been graded or classified by the Illinois Department of Public Health, 15 use a public water supply, and 36 use wells. The water supply in 11, or 21.5 percent, of the 51 camps inspected and graded was not approved.

Rural Schools.—A review of the latest series of sanitary surveys of 98 schools scattered throughout the county indicates that although 94 percent of the 98 wells had water of a satisfactory bacteriological quality at the time of examination, 65 percent had one or more sanitary defects. Pressure systems were used in 75 percent of these schools.

The Illinois school law provides that it shall be the duty of boards of education "to provide for the schools in their district an adequate, clean, palatable, and safe supply of water for drinking purposes and for general school use." Since 65 percent of the schools have sanitary defects in their water systems, it is evident that the various boards of education must take considerable action if they are to fulfill their responsibilities under the law.

Recreational Areas.—The Forest Preserve District is the main recreational area in rural Cook County. Some 36,000 acres of land provide recreational facilities of all kinds for more than half a million people every year. There are some 300 wells on Forest Preserve property, of which 275 are used by the public. A systematic annual sampling program, inaugurated by the Cook County Department of Public Health in 1940, has been carried on regularly ever since. Sampling of 275 wells in the spring of 1946 indicated that water in 263 was satisfactory from the bacteriological standpoint and in 12 was unsatisfactory. At the end of the 1946 season, 9 of these 12 were still unsatisfactory and 3 had been approved. With an unsatisfactory well the Forest Preserve District proceeds as follows: it (a) heavily chlorinates the well; (b) resamples; (c) if well still shows presence of contamination, removes well handle and cleans well with compressed air and rechlorinates; (d) resamples and, if still unsatisfactory, caps well.

Methods of constructing wells in the Cook County forest preserves are not entirely in accord with the standard practices recommended by the United States Public Health Service and the Illinois and Cook County health departments. To safeguard the sanitary quality of the water supplies in the Forest Preserve District, the procedures recommended by the Cook County Department of Public Health should be adopted. These wells are used exclusively by the public, therefore their satisfactory maintenance is vitally important and of particular concern to the urban areas in which most of the visitors to the Forest Preserve live.

Industrial Water Supplies.—A 1939 census reported 660 industries in Cook County outside of Chicago, manufacturing annually products worth \$5,000 or more and employing 45,998 wage earners. It is estimated that these figures may be increased by 30.8 percent for 1946. Many of these industries maintain their own water-supply systems through privately owned and operated wells. Because the engi-

neering staff of the Cook County Department of Public Health is so limited, these industrial water supplies have been inspected and sampled only upon an industry's specific request.

Semi-Public Water Supplies.—Community water-supply systems operated by private companies serve five subdivisions in the unincorporated areas. The population served is approximately 3,402, and there are 945 water connections. Only about 250 people live in the smallest subdivision. The estimated population of the largest is 1,332. The Cook County Department of Public Health supervises the sanitary quality of these semi-public water supplies through periodic sanitary surveys and collection of water samples for bacteriological examination.

Considerable difficulty has been experienced with a number of these systems because the original construction was, in some cases, intended for a smaller population than that now served. In general, the water pipes are smaller than good engineering practice would dictate. The depletion of the ground water has caused frequent water shortages, and the maintenance of the systems is generally poor.

SANITARY CONTROL OVER RURAL WATER SUPPLIES Various aspects of sanitary control over the location and drilling of a well in rural Cook County are exercised by a number of agencies, including state and county health departments, the State Department of Mines and Minerals, the Cook County Zoning Bureau, and the Federal Housing Administration.

The State Department of Mines and Minerals requires a statement and a map from the owners giving the location of the well. The driller or owner must also supply the State Geological Survey with a log of the well within thirty days of the completion of the drilling. In addition, the well must be sealed to prevent the escape of water or other materials from one stratum to another.

The Cook County Zoning Bureau and the Federal Housing Administration require proper location of the well with respect to possible sources of pollution and proper construction to prevent any pollution from entering the well. The Cook County Zoning Bureau will not issue a permit, nor will the Federal Housing Administration approve a loan, if the location of the well does not meet the requirements of the Cook County and Illinois health departments.

Inspections of newly drilled wells are made principally by inspectors from the Cook County Zoning Bureau, who check these

wells for proper construction and location with respect to possible sources of contamination. When directly concerned, the Federal Housing Administration accepts inspections made by the zoning bureau or, if the well is located in an F.H.A. financed unit, makes its own inspection. Where some technical question is involved, inspections of existing and newly constructed wells are made by engineers from the Cook County Department of Public Health.

The Cook County Zoning Bureau is organized as a branch of the Cook County Highway Department. An important function of this bureau is the approval of applications for water supplies and sewage disposal facilities in the unincorporated areas of Cook County. The standards they use in approving such applications are those promulgated by the Cook County Department of Public Health and are based on the standards of the Illinois Department of Public Health.

Since the Cook County Zoning Bureau is interested primarily in zoning and does not have a staff of qualified sanitary engineers, it would seem logical for the Cook County Department of Public Health to assume this direct sanitary engineering function. The department's engineering staff should then be increased sufficiently to enable it to carry the additional work involved.

Rural water supplies are further protected by regular sampling programs conducted by the Cook County Department of Public Health. These programs involve Forest Preserve wells, schools, swimming pools, tourist and trailer camps, recreational camps, and the like. The frequency of routine sampling is governed primarily by the number of engineering personnel available for this type of work in the present limited staff of the county health department. Investigation of complaints and provision of assistance requested by the public regarding rural water supplies are also county health department functions.

RECOMMENDATIONS

It is recommended that:

1. The individual municipalities in Cook County shall fully assume their responsibilities for providing a water supply safe for drinking.

2. The Cook County Department of Health, in conjunction with the Illinois Department of Public Health, shall make available to each municipality, periodically, a complete up-to-date report of the

sanitary survey of the water system, indicating all defects found and methods for correcting such defects and maintaining frequent inspections until all defects are corrected.

3. The Cook County Department of Public Health, in conjunction with the Illinois Department of Public Health, shall recommend that municipalities receiving water supplies from other municipal systems rechlorinate the water supply for the protection of their own citizens before its distribution to their consumers.

4. Bacteriological examinations of all water supplies in Cook County collected routinely under the program of state and county supervision shall be made by the Chicago laboratory of the Illinois Department of Public Health.

5. Municipalities provided with a water-supply system shall collect, in co-operation with the Illinois Department of Public Health and the Cook County Department of Public Health, at least the minimum number of water samples per month as recommended by the United States *Public Health Service Drinking Water Standards*.

6. The engineering staff of the Cook County Department of Public Health shall be enlarged in accordance with the recommendations made in other parts of the survey in order that adequate supervision be maintained over the water supplies in the county.⁸

7. All boards of education shall assure a safe water supply to the children attending their respective schools by complying with recommendations made by state and county departments of public health and by taking all other necessary precautions.

8. The standards relating to the sanitary control of water-supply systems as recommended by the Illinois Department of Public Health and the Cook County Department of Public Health shall be put into effect by the officials of the Forest Preserve District of Cook County.

9. Each municipality in the county and the Board of Commissioners of Cook County shall lend active support to the formation of an integrated water system for the Chicago region.⁹

10. The Board of Commissioners of Cook County shall enact rules and regulations pertaining to the control of water supplies in subdivisions in the unincorporated areas of Cook County.

11. The Illinois Commerce Commission, in co-operation with the Illinois and Cook County departments of public health, shall

⁸ See footnote 7.

⁹ Discussed in Chapter 4.

exercise close supervision over those semi-public water supplies operated by private companies in the unincorporated areas of Cook County.

12. The functions relating to water and sewerage systems now enforced by the Cook County Zoning Bureau shall be transferred to the Cook County Department of Public Health when the latter department has been provided with the increased staff recommended in other sections of the survey.

THE PROPOSED METROPOLITAN WATER SYSTEM

by *Leonard B. Dworsky*

THE ADEQUACY AND SAFETY of a water supply affects the health of human beings profoundly wherever they exist. The problem becomes especially acute in a region such as the Chicago area, where the population is concentrated.

The notable advances in transportation and communication, development and concentration of industry, and the growth of marketing and service organizations during the past fifty years have produced a phenomenal growth in certain urban population centers. Large central cities have developed, encircled by a multitude of smaller municipalities. Without minimizing the importance of the smaller communities, it is obvious that these satellite municipalities exist only because they are close to a large "mother" city. It is in the central city that the majority of the citizens find gainful occupations. The daily periodicals they read are published in the city; the city provides the cultural activities that satisfy their desires in the world of music and art: the out-standing museums, libraries, and entertainment centers. Reception and distribution of their food supplies is centered in the city. Often, through no action of their own, the satellite communities benefit from the city's progressive health services, its water supply and sewage disposal systems, and other public or private utilities necessary for the maintenance of a large urban municipality.

Areas such as these, with a vast number of common functions, have been termed metropolitan districts. The U. S. Bureau of the Census has defined such districts to include "in addition to the central city or cities, all adjacent and contiguous minor civil subdivisions or incorporated places having a population of 150 or more per square mile." A metropolitan district is thus not a political unit, but rather an area including all the thickly settled territory in and around a

city or groups of cities. It tends to be a more or less integrated area, having common economic, social, and often administrative interests.

Forty-seven percent of the total population of the United States live in the 140 metropolitan districts reported by the Bureau of the Census. Almost 30 percent are in seventeen districts, each of which has a population of 750,000 or more. The Chicago Metropolitan District is the second largest in this group, exceeded only by New York. Metropolitan districts are, therefore, of great importance in the life of the country.

Various types of government organizations have been and are being created to meet the demand for modernization that has accompanied the emergence of the metropolitan district as a major political structure in the country. They range from state-created and operated metropolitan commissions, with authority to utilize the sovereign power of the state, down to minor governmental subdivisions authorized by the state legislature to provide local control over a particular governmental function. These individual agencies, regardless of their extent, are important because they indicate recognition of the problems confronting metropolitan districts. Literally hundreds of laws have been written in an effort to cope with metropolitan problems, and the trend of government is toward consolidation of functions wherever indicated.

Existing conditions in regard to the water supply in Cook County outside Chicago have been discussed in detail in Chapter 2. A brief recapitulation of some of the facts brought out is presented here, however, in order to emphasize the need for a co-ordinated system.

Of the 89 municipalities in Cook County, excluding Chicago, 77 provide municipal water-supply facilities. These systems serve 73 million gallons of water daily to an estimated 1946 population of 650,000 to 700,000 people. Fifty-three municipalities provide no treatment to the water they supply. Sixty-three do not meet *all* the drinking-water standards of the U. S. Public Health Service. The water supplies of 63 do not meet the standards as to source and protection.

Fifty-nine municipalities do not collect the minimum number of water samples for bacteriological examination required by the U. S. Public Health Service. Among the 77 municipalities which require chlorination facilities, only 23 actually provide them, and only 13 of the 23 maintain adequate control over the operation of these facilities.

Sixty-six of the 77 water systems have been in existence 20 years or longer—30 of them for 25 years or more. The assumption does not seem unreasonable, therefore, that had these municipalities desired to provide or been capable of providing this necessary public-health protection, they would have done so long since.

If each municipality individually took all the protective measures necessary for public health, the result would be 77 individual water-distribution systems, 77 independent pumping stations, 77 mobile chlorination trailer units, 77 meter repair and auxiliary shops, 77 independent operating and maintenance crews and supervisors, and 77 sets of accounts, records, and billings.

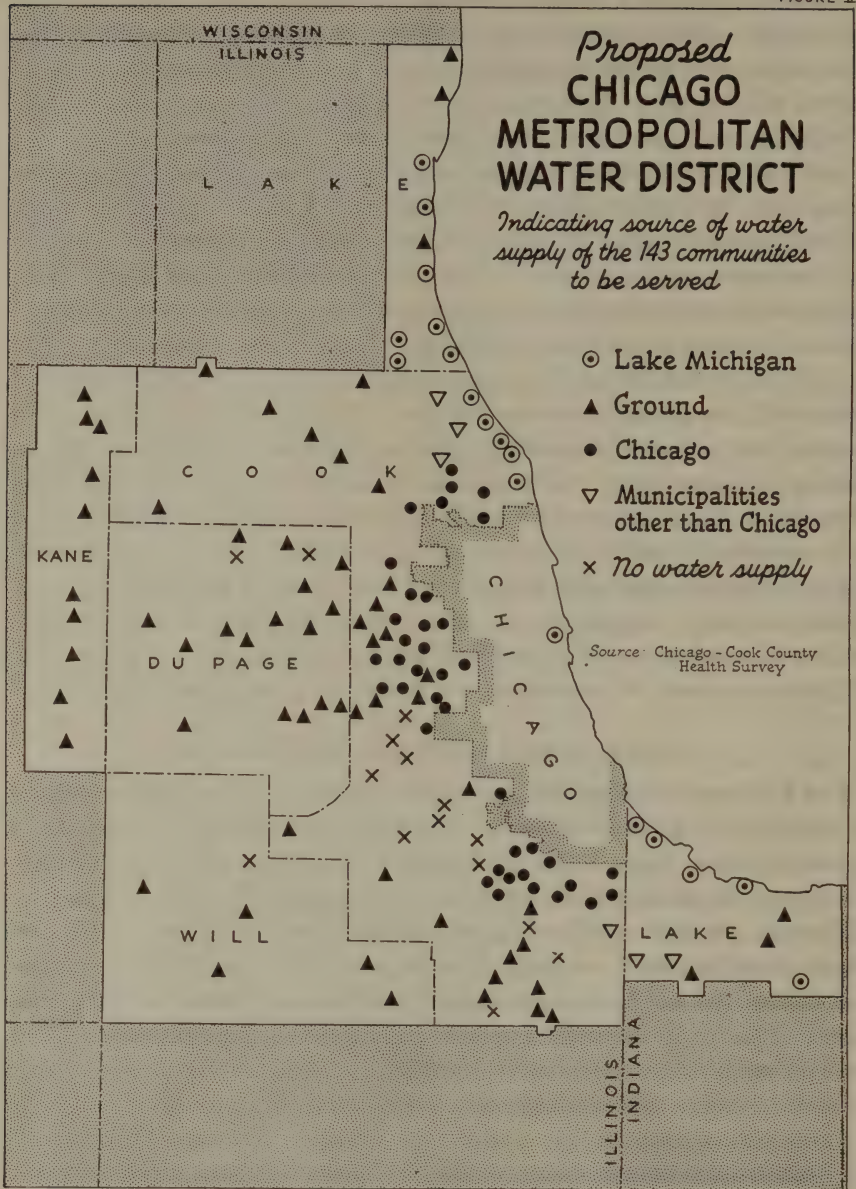
These are the facts. The need for action to solve the problem as efficiently as possible cannot be denied. Since modern society possesses the technical knowledge and equipment required to ensure adequate protection and maintenance of the people's health, antiquated political structures should not be permitted to interfere with the establishment of the most effective system that can be devised. The multifold political boundaries have tended to restrict the action needed to integrate the water-supply facilities in the Chicago-Cook County area. The problem can be solved more readily if the Chicago region is considered in terms of a metropolitan district.

THE PROPOSED METROPOLITAN DISTRICT

The Chicago Metropolitan District is defined by the 1940 census to include all of Cook County, five townships in Du Page County, three townships in Lake County, Illinois, and three in Lake County, Indiana. In its study of a proposed metropolitan water district for Chicago, the Chicago-Cook County Health Survey extended this area to include adjacent territory in Kane and Will counties, reasonable in extent, which have water-supply problems common to the census area. This proposed Chicago Metropolitan District contains 143 incorporated places (exclusive of Chicago), 89 of which are within Cook County. These places are classified by population ranges in Table 23 as follows: (1) within the Chicago Sanitary District, (2) within Cook County, but outside the Sanitary District, and (3) outside Cook County (see map on page 74).

Census figures for the present Chicago Metropolitan District indicate strikingly the continual expansion outward of the population from the city. In 1920 only about 19.0 percent of the total population in the district lived outside Chicago. By 1940, according to census

FIGURE II



figures, this percentage had increased to 28.3. The distribution of the total population of 4,734,987 reported for the Chicago Metropolitan District in the 1940 census is as follows: within the city, 3,396,908 (71.7 percent); outside the city, 1,338,179 (28.3).

The comparison of population increase in Cook County, within

TABLE 23. 1940 DISTRIBUTION OF INCORPORATED PLACES, OTHER THAN CHICAGO, IN THE PROPOSED METROPOLITAN DISTRICT

| <i>Population Ranges</i> | <i>Total</i> | <i>Within Chicago Sanitary District</i> | <i>Cook Co. Outside Sanitary District</i> | <i>Outside Cook County</i> |
|------------------------------|--------------|---|---|--------------------------------|
| 1-499 | 13 | 4 | 5 | 4 |
| 500-999 | 27 | 8 | 9 | 10 |
| 1,000-2,499 | 31 | 14 | 7 | 10 |
| 2,500-4,999 | 24 | 11 | 6 | 7 |
| 5,000-9,999 | 21 | 7 | 1 | 13 |
| 10,000-24,999 | 15 | 11 | 1 | 3 |
| 25,000-49,999 | 6 | 2 | 0 | 4 |
| 50,000-99,999 | 5 | 3 | 0 | 2 |
| 100,000-250,000 | 1 | 0 | 0 | 1 |
| Total | 143 | 60 | 29 | 54 |

and without the city limits of Chicago, also illustrates this trend. The area outside Chicago has consistently grown much more rapidly than has Chicago itself. During the ten-year period 1930-40, Chicago's population increased only 0.6 percent, while the population of the remainder of the county increased 10.1 percent.

CHICAGO The heart of the Chicago Metropolitan District is the city of Chicago. It is the focal point about which the social, cultural, industrial, and political life of the district rotates. Its activities and developments are reflected throughout the area by which it is surrounded.

The Cook County Highway Department estimates, by means of field surveys, that 126,410 automobiles carrying 211,000 people enter Chicago on an average week day. The Chicago Association of Commerce estimates that 220,000 passengers arrive and depart daily via the suburban rail transportation system. Thus, it is conservative to estimate that 430,000 people enter Chicago on an average week day to shop and to find recreation and work. The great majority of the people who live in the metropolitan district really belong to Chicago, since they are dependent upon Chicago for their livelihood, either directly or indirectly, and are there because of the existence of Chicago. Contact between the population within and without Chicago is integrated to such an extent that the central city, if it is truly to administer its responsibilities, must lend its great energy and capacity to the area outside the city whenever possible.

Chicago's acceptance of this responsibility, whether consciously or unconsciously, is illustrated by the following important city activities which affect the entire region: the establishment and operation of the Sanitary District of Chicago, which is maintained primarily by Chicago; the inspection services by the Chicago Health Department

to ensure the safety of the milk supply of the area; and the use of the Chicago water-supply system by forty municipalities. The great need for an extension of such services through an agency satisfactory to all concerned has been brought out clearly in the findings of the Chicago-Cook County Health Survey.

NEED FOR AN INTEGRATED WATER SUPPLY Among the many factors which point up the desirability of integrated water-supply facilities for the Chicago Metropolitan District,¹ the following are significant: the availability of an unlimited source of water in Lake Michigan; the detrimental effect of the continual depletion of ground water resources upon those municipalities which draw water from wells; the general lack, in the majority of the municipalities, of the adequate safety-control measures needed to ensure a safe water supply; the added expense for soap and softening equipment incurred by residents of municipalities using hard ground water; the existence of 128 independent governmental agencies in the district (78 in Cook County alone), each responsible for providing a safe water supply; inefficient water systems operated by subdivision, industrial, and land development agencies because no single governmental agency is able to supply a water adequate in quantity and safe for drinking.

THE CHICAGO WATER-SUPPLY SYSTEM

The Chicago water-supply system consists of 6 water intake shafts protected by crib structures located two to three miles off shore, a series of tunnels connecting the intakes with 12 major pumping stations, and a water main distribution system which delivers the water to the consumer. Of the 6 intake shafts, 4 are at present used. The system further includes a new water filtration plant to serve the south side of Chicago and an extensive system of chlorination equipment to ensure the safety of the water supply.

ADEQUACY OF THE WATER SUPPLY The source of water, Lake Michigan, provides an unlimited reservoir, the use of which is limited only by the facilities provided. The nominal capacity of the tunnel system in 1944 was 1,955,000,000 gallons per day, or slightly less than two billion gallons per day. The pumping stations are equipped with 58 pumps and 23 reserve pumps that have a rated capacity of 2,285,000,000 gallons per day, or approximately 2¼ billion gallons.

¹ Hereafter, whenever the term "Metropolitan District" is used, it refers to this larger area.

TABLE 24. GROWTH OF PUMPING FACILITIES
CHICAGO WATER WORKS, 1920-44

| <i>Year</i> | <i>Rated Daily Pumping Capacity (In million gallons)</i> |
|-------------|--|
| 1920 | 1,147 |
| 1925 | 1,399 |
| 1930 | 1,834 |
| 1935 | 1,849 |
| 1940 | 2,309 |
| 1944 | 2,285 |

Table 24 shows the growth of the pumping facilities since 1920. One day in 1941 marked the period of greatest water usage to date. On this occasion the system utilized approximately 84 percent of its total rated capacity. During this 24-hour period 1,406,460,000 gallons of water were pumped. The maximum hourly pumpage was also reached at this time and was at a daily rate of 1,666,000,000 gallons.

The average daily water consumption for an estimated 1945 Chicago population of 3,520,000 people was 963,720,000 gallons, or slightly less than one billion gallons per day. The increase in population, average daily consumption, and water consumption per person per day is shown in Table 25. This table indicates that the total water pumpage within the city has remained fairly stable since 1930.

On the assumption that 7 percent of the 16 percent reserve capacity of the Chicago water system would be available for use outside Chicago, 500,000 people could be served by that portion of the reserve. This estimate is based on a consumption figure of 270 gallons per person per day.

The Chicago Regional Planning Association has stated that "today [1945] it is generally agreed that Chicago's population in 1960 will be about 3,750,000." In other words, the population is not expected to grow much beyond its present size during the next fifteen years. In addition, the Division of Engineering of Chicago recently estimated that eventual metering of the city would save approximately 175 million gallons of water every twenty-four hours. The water saved by this procedure alone would be adequate to supply an additional 875,000 people. This estimate is based on a daily per capita consumption of 200 gallons.

It seems reasonable to assume, therefore, that the present capacity of the Chicago water-supply system not only is adequate for Chicago's foreseeable requirements but also would provide a reserve which could be used to supply areas outside the city.

TABLE 25. GROWTH STATISTICS OF THE WATER-WORKS SYSTEM OF THE CITY OF CHICAGO^a

| YEAR | TOTAL | | | | CITY OF CHICAGO | | | | OUTSIDE COMMUNITIES | | | |
|-------------------|-----------------------------|---|-------------------------------|--|-----------------------------|---|-------------------------------|--|-----------------------------|---|-------------------------------|--|
| | Population (In millions) | Pumpage Average per Day (In million gal.) | Pumpage Gallon Capacity | | Population (In millions) | Pumpage Average per Day (In million gal.) | Pumpage Gallon Capacity | | Population (In millions) | Pumpage Average per Day (In million gal.) | Pumpage Gallon Capacity | |
| 1920 | 2,906 | 773,100 | 266.0 | | 2,766 | 760,100 | 274.8 | | 140 | 13,000 | 92.7 | |
| 1925 | 3,311 | 887,346 | 268.0 | | 3,094 | 865,196 | 279.7 | | 218 | 22,150 | 101.6 | |
| 1930 | 3,684 | 1,059,441 | 287.6 | | 3,378 | 1,019,875 | 301.9 | | 306 | 39,565 | 129.1 | |
| 1935 | 3,722 | 986,753 | 265.1 | | 3,388 | 948,842 | 280.0 | | 334 | 37,911 | 113.5 | |
| 1940 | 3,761 | 963,776 | 256.2 | | 3,398 | 917,874 | 270.1 | | 363 | 45,902 | 126.5 | |
| 1944 | 3,787 | 977,265 | 258.1 | | 3,400 | 916,623 | 269.6 | | 387 | 60,642 | 156.7 | |
| 1945 ^b | 3,940 | 963,720 | 242.0 | | 3,520 | 900,167 | 262.8 | | 420 | 63,200 | 155.0 | |

^a Dept. of Public Works, *Sixty-Ninth Annual Report*, December 31, 1944, p. 42B.

^b Chicago Water Works, *Summary of Statistics*, December 31, 1945.

CO-OPERATION WITH MUNICIPALITIES

American political practice has always preferred new governmental forms that were evolutionary in character to new methods which tended to break sharply with existing organizations. The ideas contained in this report are not radical. For more than thirty-six years existing state law has made it mandatory for Chicago to supply water to other municipalities within the Chicago Sanitary District. Forty municipalities already are dependent upon Chicago for their water supply and Chicago authorities have given considerable thought to plans for utilizing the Chicago waterworks for a proposed metropolitan area water supply.

The 1944 *Annual Report* of the Department of Public Works includes a section entitled "Proposed Metropolitan Area Water Supply from Chicago Water Works." This section states in part:

Receding well supplies in many cities, towns and villages in the vicinity of Chicago have made it advisable to include in the City's post war program of public works a plan for supplying water to municipalities in a metropolitan area, which would consist of territory within a radius of approximately 40 miles from the City Hall.

Under Illinois statutes,² as revised in 1943, the city of Chicago is obligated to furnish water to other municipalities as may be required at a rate no greater than that paid by like consumers having meters within the city. In order to receive the water supply, a municipality is required to build suitable and sufficient water mains to the city limits of Chicago, at no cost to Chicago.

REQUIREMENTS FOR CO-OPERATION Municipalities desirous of receiving water from the Chicago water system are required to make application for such service in writing. The application is processed through the legal forms and engineering studies required, and, if approved, a contract for the water service is drawn up between Chicago and the municipality involved.

Written application must be made to the commissioner of public works, submitting such information as: quantity of water required; average and maximum daily water requirements for next ten-year period; size and location of connection to Chicago main, present and estimated population, capacity and character of existing and

² *Illinois Revised Statutes*, 1943; Chapter 42 (Sanitary District Act, Sec. 26: p. 1351, par. 348).

future storage facilities, map of distribution system, and complete financial statement.

Processing of the application includes engineering studies of the pressure and capacity of the existing Chicago system in order to determine whether reinforcement of the system is necessary to deliver the required amount of water to the point of connection. Further requirements include requests for funds if reinforcing work is necessary, request for and granting of authority by the city council for the city officials to draw up and execute a contract with the municipality, and, before final execution, submission of the application and contract through several council committees, the corporation counsel, and the office of the commissioner of public works.

The terms of the contract entered into between Chicago and a municipality include sections referring to the service to be furnished, quantity of water, rates and discounts, period of contract, meters and terms, and conditions of service.

LIMITATIONS OF CO-OPERATION Chicago provides water service to other municipalities in accordance with the Sanitary District law. It might appear that all Chicago need reasonably do is to provide the quantity required, meter the amount, and bill the municipality for the service. Municipalities served by Chicago might desire a simple arrangement of this nature. No demands would be made upon them other than what they would require of themselves.

The actual requirements in the contract drafted by Chicago, however, are far from simple. For its own protection, Chicago requires that the municipality: at its own cost construct and maintain all feeder mains, connections, meter vaults, pumps, tanks, valves, and other necessary equipment at the point of connection; provide, maintain, and operate, at locations designated by Chicago, shut-off gates and reservoirs of sufficient capacity to store not less than one day's supply of water; provide all appurtenances and devices which may be required by the commissioner of public works; agree to maintain and operate the reservoir at full capacity; be restricted as to the hours it can receive water during certain parts of the year; agree that Chicago shall have access to and the right to adjust and control valves and meters in order to limit the flow of water; agree to comply with any and all sanitary regulations of Chicago applicable to cross-connections and dual water supplies; agree to allow authorized engineering inspection personnel of Chicago to make inspections of tightness of piping of water-works installations and of all

plants or other buildings of water users within the municipality; in order to safeguard its water supply and that of Chicago, agree to maintain a safe water supply throughout its system and provide, maintain, and operate, during the period of the contract, chlorinating equipment or other equally effective health protecting devices; agree not to resell water outside of its borders except with the permission of Chicago; agree that Chicago will not be responsible in damages for any failure to supply water or for interruption of the supply and that Chicago be saved and kept harmless from any and all damage to real and personal property occasioned by making the water connection or the furnishings of water.

There is no doubt but that these requirements are reasonable and that Chicago must protect its water supply both as to quantity and sanitary quality in order to serve its own consumers in the best possible manner. The undesirable feature of these requirements, for which neither Chicago nor the individual municipality can be held responsible, is that each individual contract requires each municipality to install its own reservoirs, pumping equipment, valve devices to prevent back-flow into the Chicago water system, chlorination equipment, and feeder mains. As a result of this policy all this equipment will eventually be duplicated 40 times in the 40 municipalities now receiving Chicago water, regardless of the distance between municipalities or of the engineering need for such facilities regardless of political boundaries. The following statements illustrate this waste and duplication of service. Twenty-one of the 40 municipalities provided with water from Chicago have a total of 72 pumps in 21 individual pumping stations and are attended by 21 different groups of operators. In addition, 23 municipalities have their own reservoirs.

This situation, viewed on an over-all basis, is not in accord with good engineering practice and economy. Present legal restrictions, however, necessitate the provision of individual municipal services.

The terms of the contract provide further that Chicago be relieved of all responsibility for the safety of the water supply in the individual municipality and for all damages that may occur in the provision of the water service. Yet, Chicago maintains the right to inspect the municipal system for certain features relating to the sanitary quality of the water. These contract requirements show that Chicago, although legally absolving itself from any responsibility, has placed many regulatory controls upon the individual municipality.

SPECIAL WATER-CONTROL ACTIVITIES In addition to the controls by contract, the city's activities have been voluntarily extended in the following ways. Disinfection with chlorine is now required of any new water main or repairs to water mains which are part of the connection to the Chicago water system, and bacteriological examination of the water to ensure its safety before the main is placed into operation. Reservoirs and other appurtenances are included in these water-safety activities. Chicago does not charge for these services. Personnel and equipment used for such water-control activities are also made available without charge during an emergency to all municipalities served by the Chicago water system. A fee is charged, however, if personnel and equipment are provided, at the request of a municipality, for similar safety operations on a municipal water distribution system.

EXAMPLES OF WATER-SAFETY ACTIVITIES The following brief descriptions of services provided to municipalities by Chicago show clearly that the water-safety activities discussed in the preceding paragraph are not merely "paper plans and programs."

Calumet City, Ill. (1942).—Various sections of the city were without water from 2 to 29½ hours because of valve failure on 24-inch Chicago supply line. The Calumet City reservoir was not in use because the valve was out of order. An emergency connection was made to Hammond, Indiana and the supply flushed and chlorinated. An order was given to boil all water.

Lincolnwood, Ill. (1942).—Inspection of industrial water supply and adjacent main showed that the water supply was grossly contaminated. The industry's water supply was chlorinated until contamination no longer existed.

Melrose Park, Ill. (1943).—A new 20-inch supply line was constructed to Chicago. The supply line was chlorinated and sampled for bacteriological examination before approval.

Lincolnwood, Ill. (1943).—An emergency supply was required during installation of a larger meter valve. Temporary fire hose connection was disinfected with chlorine.

Maywood, Ill. (1944).—Failure of well supply necessitated emergency connection to adjoining municipalities. Emergency connections were made to Melrose Park and Broadview, already supplied by Chicago water. General sanitary assistance was rendered to Maywood.

Oak Lawn, Ill. (1944).—Failure of well water supply necessitated emergency connection to Chicago supply. Over one mile of

temporary fire hose line with five intermediate booster pumps was laid from Evergreen Park. Straw protection was furnished because it was winter. Samples were connected and hose disinfected. A 6-inch main was laid early in 1945 to the Chicago System. Main was disinfected and samples collected until water was safe for drinking.

Park Ridge, Ill. (1944).—An 8-inch water main broke and washed out an adjacent sewer, creating a particularly hazardous condition. The water main was treated with high chlorine dosages on three occasions before samples collected indicated that it was safe for use.

Park Ridge, Ill. (1945).—(1) The water pressure dropped to zero and no water supply was available for fifteen minutes. The water system was flushed and provided with emergency chlorination. (2) Officials decided reservoirs needed cleaning. Chicago staff supervised cleaning operation and disinfected reservoir with chlorine. Samples were collected to check safety at reservoirs before they were placed in use.

River Grove, Ill. (1945).—Water superintendent requested 1,600 feet of 6-inch water main disinfected. Disinfection was provided and samples collected until the safety of the system was assured.

Evergreen Park, Ill. (1945).—Officials requested assistance in disinfecting 12-inch water main. Disinfection was provided and samples collected until the safety of the system was assured.

Why does Chicago perform these services? Basically, they are necessary precautionary measures designed to prevent possible contamination from entering the Chicago water supply through the connections with the contracting municipalities. A further reason for the initiative which Chicago assumes in advising municipalities about necessary precautions and in rendering assistance lies in a desire to make certain that the water it supplies is kept in a safe condition. The need for such activity cannot be doubted.

There is, as a matter of fact, continuous expansion of the service Chicago renders to the municipalities receiving water from its system. These municipalities are not in a position to provide the personnel required for this type of specialized service. The technical "know how" possessed by the technically proficient engineering staffs in the Chicago water-supply system has made the municipalities increasingly dependent upon their advice and assistance.

NEED FOR PRECAUTIONARY MEASURES Although these activities are commendable, the precautionary measures undertaken at the present time by either Chicago or the municipalities are far from

adequate. Obviously, the maintenance of a water supply safe for drinking at all times requires an organization with an adequate, well-trained technical staff, diligent and sincere in their purpose to protect the public health, and provided with the facilities and funds necessary to accomplish their mission. Only a few municipalities in the Chicago area are provided with facilities and maintain operational programs equivalent to those available in the Chicago water-supply system.³ The following data illustrate, in part, the extent of the safety precautions taken by Chicago: an average of 604 residual chlorine tests daily, or 220,460 per year, for the four-year period 1942 to 1945, inclusive; an average of 5,610 water samples per year for bacteriological examination collected from the distribution system for the four-year period 1942 to 1945, inclusive; an average of 43,682 water samples per year for bacteriological examination collected from the total system for the four-year period 1942 to 1945, inclusive; inspections made of an average of 96 feeder-main shut downs per year during the four-year period 1942 to 1945, inclusive; inspections made of an average of twenty large new or repaired water mains per year and disinfection accomplished for four-year period 1942 to 1945, inclusive; an average of thirty-four large fires (four to eleven alarms or greater) per year investigated and water safety measures effected when necessary for the four-year period 1942 to 1945, inclusive; an average of 356 inspections per year of pumping station chlorination equipment and operation by Water Safety Control Section for three years, 1942, 1943, and 1945; maintenance of automatic pressure recording gauges in strategic locations throughout the system; maintenance of twenty mobile chlorination units for disinfection of mains and emergency operations.

A central water authority, with power to integrate the duplication of existing services and responsibility and to place the water-supply systems of the Chicago area on a sound engineering basis could take the necessary action throughout the system to provide a water supply safe for drinking.

PRESENT AND FUTURE WATER-SUPPLY REQUIREMENTS

The 143 municipalities in the metropolitan region have been studied with regard to sources of water supply, population, present and future water requirements, and the relationship of these requirements to the average daily pumpage and total rated capacity of the Chicago

³ See Chapter 3 for factual data which substantiate this conclusion.

water system. The municipalities have been classified in the following six groups according to present sources of water supply: Chicago water-supply system; ground water supplies; no water supply; surface-water supply (Lake Michigan)—no purification plant; water system other than Chicago's; surface water (Lake Michigan)—purification plant.

The one municipality which uses surface water, but has no purification plant, is located outside Cook County. Of the eight municipalities which obtain water from water systems other than Chicago, three are within the Sanitary District of Chicago, one is outside the Sanitary District, but inside Cook County, four are outside Cook County. Nine of the fourteen municipalities which use surface water and have their own purification plants are outside Cook County and five are within the Sanitary District of Chicago.

TABLE 26. PRESENT WATER-SUPPLY REQUIREMENTS FOR PROPOSED CHICAGO METROPOLITAN AREA

| <i>Classification of Municipalities by Source of Water Supply</i> | <i>Number in Each Group</i> | <i>Population 1940</i> | <i>Present Water Consumption (Gal. per day)</i> | <i>Percent of Average Daily Chicago Pumpage</i> | <i>Percent Total Chicago Capacity</i> |
|---|-------------------------------------|----------------------------|---|---|---|
| Chicago water-supply system | 40 | 384,504 | 63,625,000 | 6.60 | 3.182 |
| Own ground water supplies | 65 | 355,685 | 31,896,000 | 3.31 | 1.594 |
| No water supply | 15 | 7,483 | 748,300 | 0.07 | 0.038 |
| Surface water (no purification plant, | 1 | 111,719 | 16,758,000 | 1.74 | 0.838 |
| Water system other than Chicago's | 8 | 15,902 | 1,507,500 | 0.16 | 0.075 |
| Surface water (operate own purification plant) | 14 | 314,873 | 48,802,000 | 5.07 | 2.440 |
| All types | 143 | 1,190,166 | 163 336 800 | 16.95 | 8.167 |

Table 26 presents the 1940 population, present water consumption in terms of gallons per day, and percent of total average daily Chicago pumpage which would be used by the municipalities in the six groups. The table shows that only 8.167 percent of the total capacity of the present Chicago water-supply system would be utilized by these 143 communities if all of them now obtained water from this central source. Municipalities already served by Chicago consume 3.182 percent of the total Chicago capacity.

Table 27 presents estimates prepared to show the situation in 1960 if *all* the municipalities in the six groups utilized the Chicago water-supply system.

These estimates indicate that only 10.948 percent of the total rated

TABLE 27. ESTIMATED 1960 WATER-SUPPLY REQUIREMENTS FOR PROPOSED CHICAGO METROPOLITAN AREA

| <i>Classification of Municipalities by Source of Water Supply</i> | <i>Number in Each Group</i> | <i>Estimated Population 1960</i> | <i>Estimated Future Consumption (Gal. per day)</i> | <i>Percent of Average Daily Chicago Pumpage</i> | <i>Percent Total Chicago Capacity</i> |
|---|-----------------------------|----------------------------------|--|---|---------------------------------------|
| Chicago water-supply system | 40 | 534,800 | 88,560,800 | 9.19 | 4.428 |
| Own ground-water supplies | 65 | 435,400 | 39,603,200 | 4.11 | 1.980 |
| No water supply | 15 | 14,200 | 1,420,000 | 0.15 | 0.072 |
| Surface water (no purification plant) | 1 | 154,000 | 23,100,000 | 2.40 | 1.155 |
| Water system other than Chicago's | 8 | 35,000 | 3,297,000 | 0.34 | 0.165 |
| Surface Water (operate own purification plant) | 14 | 404,500 | 62,958,000 | 6.53 | 3.148 |
| All types | 143 | 1,577,900 | 218,939,000 | 22.72 | 10.948 |

capacity of the Chicago water system would be needed to satisfy the estimated future water consumption requirements of the 1,577,900 people estimated as the total population of these 143 municipalities in 1960. Earlier discussion has indicated that a reserve capacity of 16 percent of the total rated capacity of the Chicago system was available during the maximum hourly demand on the system, of which 7 percent would provide for 500,000 people. It is also estimated that an additional 875,000 people could be served if Chicago were on a metered basis. Thus, there is reasonable assurance that the present and future capacity of the Chicago water-supply system, if metered, would be adequate to satisfy the demands that might be placed upon it by any or all municipalities considered in this study.

If the estimated requirements of the municipalities already served by the Chicago water-supply system and those operating their own purification plants are omitted from consideration, only 3.372 percent of the total rated capacity of the Chicago system would be required to serve the remaining eighty-nine municipalities.

WATER-SUPPLY PROBLEMS IN THE SIX MUNICIPAL GROUPS

Special problems in connection with the water supplies of the 143 municipalities in the proposed Metropolitan Area are described in the following paragraphs, classified according to the six types of water supply.

CHICAGO WATER-SUPPLY SYSTEM Of the 40 municipalities served by the Chicago system, 39 are within the Sanitary District of Chicago and are provided water in accordance with the Sanitary District Law. One municipality included in the 40 is outside the Sanitary District, but now maintains connections with the Chicago sys-

tem through intermediate communities. Another community outside the district has a connection for emergency use only and thus is not considered an official recipient of service from Chicago.

Most of these municipalities originally had individual ground-water-supply systems. As a result of difficulties encountered over the years, they have taken advantage of the Sanitary District Law and have made connections to the Chicago water system. The municipalities of Maywood and Melrose Park, for example, had repeated difficulties in securing a sufficient quantity of ground water through wells. A breakdown of the pumping equipment on its well forced Oak Lawn to install an emergency connection to Chicago. Many of the connections were made after it was found that the continued cost of attempting to develop well water supplies was significantly greater than that of maintaining a connection to the Chicago system.

The provision of the Sanitary District Law which requires a municipality desiring water from Chicago to construct a supply main from its border to Chicago has proven cumbersome and uneconomical and has tended to restrict sound engineering plans and programs for furnishing a bountiful water supply to the area. Lack of an adequate legal structure has limited the economies and good planning that could be achieved if co-operative action, with a minimum of red tape, were possible. Co-operation is so difficult under present laws that only a few combinations of municipalities, namely, Broadview-Westchester and Brookfield-North Riverside, have co-operated through the medium of a water commission to the extent of having common supply lines, adequate in capacity for the needs of both communities. Nearby municipalities receiving Chicago water have co-operated with other adjacent communities by reselling Chicago water. This co-operation is required under the Sanitary District Law. Usually, the reselling price is considerably higher than the price originally paid to Chicago. Service through such systems is often poor, since many of the initial connections were made for the purpose of supplying only the needs of the municipality making the connection. Municipalities served by water systems other than Chicago are totally dependent upon these water systems for an adequate amount of water and for proper pressure. Similar conditions are found in those water systems served directly by Chicago as of a result of the contract restrictions placed by Chicago upon these systems.

It is apparent that the development of the water service provided by Chicago to the thirty-nine municipalities within the Sanitary District of Chicago has progressed, not on the basis of what good en-

gineering practice would dictate, but solely because each municipality was obliged to take action to solve its water-supply problem. That the action had to be taken individually instead of co-operatively within the community of municipalities is due to the obsolete and inadequate Sanitary District Law. The passage by the state legislature of progressive and flexible enabling legislation which would permit a metropolitan area such as Chicago to plan for its over-all needs is not only desirable but essential to the health and well-being of the citizens within the area.

GROUND-WATER SUPPLIES Ground water is used as a source of supply. The present and estimated future populations and water-supply requirements of the municipalities operating these systems were discussed earlier in this chapter, together with the present and the future demands that these requirements would make upon the Chicago water system.

It is not contemplated that all these municipalities would require or could expect to be provided with a water supply from Lake Michigan through an integrated system for a considerable time to come. This statement is particularly true of the smaller and more or less isolated municipalities.

On the other hand, larger municipalities, such as Joliet, Aurora, St. Charles, Elgin, Wheaton, Elmhurst, Des Plaines, and Chicago Heights have been or ultimately will be in acute need of an adequate water supply because of the continual depletion of their underground-water resources.

Depletion of Ground-Water Resources.—Statistics prepared by the Illinois State Water Survey Division provide evidence of the truth of the statement that the ground water supplies of the area are being rapidly depleted. The following examples of actual conditions illustrate the continued depletion that is constantly occurring. In 1929 the water in well Number 11 of the Aurora system was 80 feet below ground level. In 1938 the water in the same well was 130 feet below the ground, a total drop of 50 feet in 9 years, or an average drop of 5.5 feet per year. In 1913 the water in the municipal well of Bellwood was 75 feet below the ground surface. In 1935 the water in the same well was 250 feet below the ground, a total drop of 175 feet in 22 years, or an average drop of 7.8 feet per year. Between 1912 and 1942 the water in the Spruce Slip well of the Joliet water system has dropped 188 feet, or an average of 6.3 feet per year.

In recent years, installation of wells for use in conjunction with air-conditioning systems and the war and postwar industrial expansion

in the area has placed a greater demand upon the ground-water resources. There can be no doubt that more and more municipalities will be forced to obtain their water supplies from Lake Michigan. There is reasonable assurance that an integrated water system capable of supplying the needs of these municipalities would be acceptable as a solution to the water-supply problems, with regard to both quality and quantity.

Hardness of Ground Water.—The quality of the ground water in the area, although generally palatable, is rather hard and often contains iron in amounts sufficient to stain fixtures and clothing. Expenditures for soap in municipalities with hard water are considerable. Many communities, such as Homewood and Oak Lawn, have invested many tens of thousands of dollars in a complete water-softening plant. Yet, practically within sight of the municipality is an unlimited source of water which does not necessarily require softening for ordinary purposes.

The average hardness of forty-seven municipal water supplies in the area is 350 parts per million. The hardness of Lake Michigan water is 127 parts per million. In the 1942 report on the *Water Supply Situation in the Joliet Area*, the consulting engineers making the report calculated the dollar savings per year in reduced soap usage that would be possible if Lake Michigan were used as the source of supply instead of ground water.⁴ They found that in twenty-four selected communities, with a total population of approximately 150,000, savings in soap would amount to 952,230 pounds per year and in dollars to \$234,190. The estimated savings in soap in the three towns of Aurora, Joliet, and Chicago Heights alone, if Lake Michigan water were used, would amount to about 753,000 pounds of soap, having a dollar value of \$180,000.

MUNICIPALITIES LACKING WATER SUPPLY Fifteen municipalities in the area have no municipal water supply. Most of these communities are small, and in all probability they could not carry the burden of developing a source of water supply and constructing a water-distribution system. Given the opportunity to utilize an existing source of water supply, many of these communities might be stimulated toward constructing a water-distribution system.

MUNICIPALITIES HAVING SURFACE WATER, BUT NO PURIFICATION PLANT Gary, Indiana, is the only municipality in this group. It is estimated that by 1960 Gary will have a population of 154,000 and

⁴ Report prepared by Black and Veatch (Kansas City, Missouri) for the Illinois State Water Survey Division.

will require 23,100,000 gallons of water per day. If an integrated water system were established and the water filtered, it would be unnecessary for Gary to build its own filtration plant. Thus, the unnecessary and costly duplication which has taken place along the North Shore in the building of filtration plants would not be repeated in Gary. No sound business or industrial organization would hesitate to take advantage of the economies that would result through the use of a central water-supply system. Unless the existing Sanitary District Law is replaced, however, by suitable legislation, local governments will be unable to effect this economy.

WATER SYSTEM OTHER THAN THAT OF CHICAGO The total future water-supply requirements of the eight municipalities now furnished water by a system provided with purification facilities amount to only 0.165 percent of the total rated capacity of the Chicago system. The differences in cost between purchasing water from a central water authority and from the system now serving them would be the deciding factor, probably, as to the source ultimately utilized. The type of service rendered as to water safety control may also play a significant role in decisions concerning which system shall be utilized.

MUNICIPALITIES HAVING SURFACE WATER AND PURIFICATION PLANT Fourteen municipalities own and operate water purification plants.⁵ Classic examples of duplication and uneconomical practice as a result of individual action are to be found in this group of municipalities. Thus, ten municipalities, including Evanston, Wilmette, Kenilworth, Winnetka, Glencoe, Highland Park, Highwood, Lake Forest, North Chicago, and Waukegan, all located within a radius of 15 miles from the central point, operate ten individual costly water-purification plants with ten separate groups of expensive, high caliber, water purification personnel. The duplication of plant facilities is obvious. The combined total future requirement of all these municipalities amounts to less than 3 percent of the total rated capacity of the Chicago system.

The separate plants operated by the municipalities of Whiting, East Chicago, and Hammond, Indiana—all located within a radius of five miles—provide another illustration of lack of co-operative action.

These purification plants are an actuality, however, and the situa-

⁵ This group of fourteen municipalities includes Chicago which has a water treatment filtration plant to process the South District supply.

tion cannot be changed. It is possible that unification and interconnection through the medium of a central water authority at some future time would result in substantial economies.

NEED FOR A CENTRAL WATER AUTHORITY

Previous surveys concerned with the possible formation of a central water authority have dealt primarily with the idea of quantity of water. The quality of the water supply either has been assumed to be satisfactory or has been disregarded. It is believed that the question of water quality will have a direct bearing on the organizational and functional responsibilities of a central water authority.

The need for a central water authority is obvious. It is believed that such an authority not only should provide a central supply of water safe for drinking but also should be given sufficient power over the water distribution system to carry out the principles involved in water safety control which would ensure a safe water supply to the free-flowing outlet.

WATER-SUPPLY SYSTEMS IN OTHER METROPOLITAN AREAS

There are few metropolitan regions in the United States which are not faced with water-supply problems similar to those encountered in the Chicago area. Methods used in the solution of these problems vary considerably. Developments in the Boston, Detroit, and Washington metropolitan districts are described in the following paragraphs.

BOSTON METROPOLITAN DISTRICT Because of competition between the various municipalities in the Boston region for the few remaining desirable sources of water, the Massachusetts legislature, in 1893, investigated the possibilities of organizing a metropolitan district for water similar to the district previously organized for parks. The water district was first organized in 1895; it was reorganized and combined with the Board of Metropolitan Sewage Commissioners in 1901, which was merged in 1919 with the Metropolitan Park Commission. The Massachusetts Metropolitan District Commission now has charge of water supply, sewage disposal, and parks in the Boston area.

The Metropolitan Water District Law provides that the commission shall construct, maintain, and operate a system of metropolitan water works. The municipalities included in the water district are enumerated, and provision is made for the inclusion of any other

municipality lying within a specified distance of the State House which voluntarily elects to come into the District and which at the time of application owns its own water-pipe system.

The Metropolitan Water District is responsible for furnishing a sufficient and pure supply of water to the municipalities in the water district. Each individual municipality is responsible for the distribution of the water within its municipal borders, the collection of water revenue from the consumer, and the maintenance of its distribution system, water meters, and appurtenances thereto, except those portions under control of the commission. The cost for the water-supply system operated by the Metropolitan District Commission is apportioned among the municipalities belonging to the water district. The officials of each municipality set all water rates except the minimum ones, which require the approval of the commission.

Service provided by the water district in 1945 is shown in Table 28.

TABLE 28. SERVICE PROVIDED BY BOSTON METROPOLITAN WATER DISTRICT

| <i>Item</i> | <i>Number of Municipalities</i> | <i>Population</i> |
|--|-------------------------------------|-------------------|
| Total in district | 43 | 1,980,221 |
| Number belonging to water district ^a | 20 | 1,511,685 |
| Percent municipalities and population served by water district | 46.5 | 76.3 |

^a Communities not belonging represent only 23.7 percent of the total population of the Metropolitan District.

DETROIT METROPOLITAN DISTRICT The city of Detroit, although not obligated by law, furnishes water to thirty-seven cities, villages, and townships in the suburban area. Chapter 12, Section 17, of the Detroit City Charter gives authority to the Board of Water Commissioners to supply water to nonresidents of Detroit. This brief section is quoted below.

POWER TO SUPPLY WATER TO NONRESIDENTS The board may extend distributing pipes, aqueducts, and mains and erect hydrants without the city, and may regulate, protect and control such portions of the works and the water supply therefrom in the same manner as it may regulate and control the works and water supply within the city. But before any water shall be supplied to any person or persons residing without the city, the entire cost of laying such distributing pipes, including the cost of superintendence and engineering, shall be paid to the city, and all such distributing pipes through which any water shall be supplied by the board shall be the property of the city and form a part of its system of

distributing pipes. The board may determine the rates at which water shall be sold to persons residing without the city; but such rates shall not be more than double the amount charged to the inhabitants of the city. The amount of water sold to persons residing without the city limits shall not exceed twenty-five per cent of the amount furnished within the city.

Thirty-four of the cities, villages, and townships using Detroit water maintain their own distribution systems, purchasing water on the basis of gross consumption and collecting their own rates from individual customers. In two villages and part of one township, the Detroit Department of Water Supply continues to maintain the water systems, making service connections, reading individual meters, and collecting water rates directly from the consumers.

Because they illustrate so vividly the type of problem confronting metropolitan areas, the following abstracted portions of the 1944-45 annual report of the Detroit Water Supply System are herewith reproduced.

SUBURBAN FEEDER MAINS The Board proposed to utilize Michigan Public Improvement Program funds for studies and preparation of plans for a transmission main. It is stated definitely, however, that no means of financing construction of this main is in sight.

To meet a particularly bad condition, which had produced many complaints from customers of suburban systems, this department made studies and prepared a preliminary plan for a transmission main in Grand River Avenue from the City limits to Middle Belt Road. The four interested townships then were invited to sponsor a Federal Works Agency project for this improvement. However, the only basis on which they were able to agree was that they could make no substantial contribution toward its cost.

Subsequently, this Department called the township representatives together, and presented a proposal to underwrite and construct the needed main, with the cost to be amortized by increased water rates to the township system. The townships were unable to come to agreement on the division of costs between themselves, and some of the townships were unwilling even to assume increased rates in order to secure improvement of supply.

In the face of this situation, although the necessity for increased feeder main capacity is generally recognized, it appears that this area must continue with its present facilities until local demand for improved service becomes more forceful or new means of financing the construction are available.

Other areas exist where, following expansion of local distribution systems, the necessity for feeder mains has been recognized and discussed, but no means of financing construction discovered.

Table 29 indicates the extent of the suburban system served by the Detroit Water System.

TABLE 29. EXTENT OF SUBURBAN SYSTEM SERVED BY DETROIT WATER SYSTEM

| | |
|---------------------------------------|-----------------------|
| Number of separate governmental units | 36 |
| Estimated population served | 522,709 |
| Area served | 135 sq. mi. |
| Total length of suburban owned mains | 11,153,415 lineal ft. |
| Total number service connections | 112,637 |

WASHINGTON METROPOLITAN AREA The Washington Suburban Sanitary Commission was organized in 1918 by the Maryland State Legislature, primarily to design, construct, and operate water and sewerage systems in the rapidly growing area of Maryland adjacent to Washington, D. C. At the present time it covers an area of 156 square miles bordering the District of Columbia and includes within its borders twenty small towns and a considerable extent of unincorporated built-up areas subject to the county governments. The water system consists of 590 miles of water mains, with 38,000 connections, and serves a population of approximately 170,000 people.

The Sanitary District is granted broad powers in that it can construct, operate, and maintain sources of water supply, purification plants, primary feeder lines, and distribution systems serving the individual consumer. It can also, at its pleasure, purchase through mutual agreement or by condemnation proceedings, existing water supply systems from public or private owners within the Sanitary District. It is further provided with authority to tax, issue bonds, and set rates for the water it furnishes.

LOCAL PRECEDENT FOR ESTABLISHMENT OF CENTRALIZED DISTRICT AUTHORITY

The establishment of a centralized water authority to serve the metropolitan area of Chicago would not stand as an isolated example of this type of governmental or private organization in the Chicago region. Precedence for this form of organization exists in the field of sewage collection and treatment, and in transportation. Private utilities have long been a guide in the development of area-wide utility systems.

SANITARY DISTRICT OF CHICAGO This area-wide agency was organized in 1889 under legislative authority to provide for the dis-

posal of sewage. As of 1940, the Chicago Sanitary District served sixty-two individual municipalities and nineteen townships in Cook County, either wholly or in part. The population included in this area was approximately 3,971,500. The District has the power to tax, issue bonds, and to construct, operate, and maintain the facilities necessary for it to fulfill its legal functions. Expansion of the District has taken place periodically to include adjacent areas. (See Chapter 5 for further discussion.)

CHICAGO TRANSIT AUTHORITY Under authority granted by the state legislature, this agency has the power to construct, operate, and maintain transportation facilities of certain general types to serve the people in the area included in Cook County east of the boundary between Cook County and Du Page County. It also has the power to purchase existing transportation systems. The need for having through lines of communication under one consolidated system to serve the metropolitan area was thus recognized, and the need for an organization capable of overriding political boundaries was obvious.

PRIVATE UTILITIES Unity of effort and facilities has been maintained for many years by private utility systems. The electric companies in the region have interwoven these systems into one unit in order to serve the area. Telephone and gas utilities are similar examples of private organizations not bound by political boundaries that offer an integrated utility service.

COMMENTS

A complete report on the subject of a centralized water authority should have included a discussion of additional factor, particularly finances. This study has been able only to highlight the major problems and to discuss the defects and disintegration of the existing water-supply facilities of the area. An attempt has been made to indicate the results of such a situation and the general action that might be taken to correct it.

The proper development of the Chicago Metropolitan Area is a problem which concerns each of the individual municipalities existing within the area. Because of the close interrelationship and intercommunication of the area, the adequacy and safety of the water-supply systems are of special importance to the individual citizen.

The division of responsibility for supplying water among 128 separate water systems, 77 of which are within Cook County, has only

tended to ensure further disintegration of the water supply in the area. The assured adequacy, safety, and economy that could be realized by planning for the area as a whole is not possible under the present system of divided responsibility.

Integration of the water-supply systems under some type of centralized water authority is desirable for the Chicago Metropolitan Area because: (1) there is an unlimited source of water supply available from Lake Michigan, (2) there has been a constant and rapid depletion of natural ground-water resources of the area upon which sixty-five municipalities are dependent for a source of water, (3) there has been a lack of action on the part of a majority of the municipalities to meet the responsibilities placed upon them by legislative authority to assure the safety of water supplies, (4) the continued use of hard water by the municipalities utilizing the ground water as a source of supply without softening increases materially the expenditures of the people residing in such municipalities, and (5) lack of an adequate water-supply system for the area has resulted in inefficient development and land usage in the region outside Chicago.

There are sound reasons to believe that the Chicago water-supply system is capable of providing a sufficient quantity of water to the entire area, both for present and future requirements. Because of the inadequacy of the Sanitary District Law under which the city of Chicago provides water to thirty-nine municipalities within and one municipality outside the Chicago Sanitary District, the service rendered is characterized by unnecessary duplication of plant and equipment, insufficient supply of water and lack of suitable pressure in certain areas, and an absence of sound engineering planning for the needs of the area.

The Sanitary District Law does not provide adequately for unity of action on the part of the various municipalities in the area. Without the proper legal forms and laws under which co-operation can be attained, municipalities, like human beings, have a difficult time in reaching an agreement suitable to all concerned. Provided with a central authority, through which the requirements of the individual municipality could be met by sound engineering practice and adequate financial arrangements, mutual benefits can be attained by all.

That the problem can be resolved is indicated by the manner in which some of the metropolitan water districts throughout the country function and by the existence of centralized public authorities and private utilities in the Chicago area.

The engineering and financial problems involved in the operation of a metropolitan water district are not unsolvable; engineering least of all. The basic requirement necessary to further action is the passage by the state legislature of the legal framework authorizing the organization of a centralized water authority.

RECOMMENDATIONS

It is recommended that:

1. The city of Chicago, in conjunction with other interested agencies, shall formulate plans for an integrated water supply that will serve the requirements of the Chicago region most adequately, in order that prompt action can be taken by the responsible authorities.

2. The interested agencies noted above shall include among others, representatives of the Division of Sanitary Engineering of the Illinois Department of Public Health, the Chicago Regional Planning Association, the Cook County Department of Public Health, the Du Page County Department of Public Health, municipalities that may possibly be served by the contemplated system, the Illinois State Water Survey Division, the Illinois State Geological Survey, and county governments whose unincorporated areas may be served by the contemplated system.

3. Specific consideration shall be given to the necessity of providing to the agency responsible for acquiring and distributing a water supply, the power to supervise the operation of water distributing systems in order to assure adequate control over the safety of the water supply at reasonable cost and without unnecessary duplication of municipal services.

SEWERAGE IN CHICAGO

by *Ralph E. Tarbett*

PROMPT REMOVAL OF WASTES containing human feces through a water-carriage sewer system is of very great importance in conserving the health of the inhabitants of an urban area. Such a system should be adequate for the purpose, and the wastes carried by the system should be disposed of without creating a nuisance or a health hazard in the area served or in neighboring communities.

Sewage consists of the waste water of a community. It contains both organic and inorganic material in suspension and solution, together with large numbers of bacteria, some of which may be pathogens¹ capable of transmitting diseases such as typhoid fever and the various types of dysentery. Water-borne waste from industrial plants is also included in the definition of sewage, particularly when it is discharged into community sewers.

Sanitary sewage is the waste from occupied buildings, with or without organic industrial wastes; with little or no industrial wastes present it is generally called domestic sewage. Storm flow from streets and city surfaces may be added to domestic sewage in a combined sewer system. Since sewage is liquid and its volume is large, final disposal is into the body of water (stream, lake, or ocean) to which the area served normally drains or in some other stream or lake to which the sewage may be diverted. This method of disposal is used for the greater part of the sewage and industrial wastes of the Chicago Sanitary District area.

From a public health standpoint, the discharge of untreated sewage into bodies of fresh water may bring about two detrimental conditions. First, the water is made unsafe for drinking purposes by the introduction of disease-causing organisms. Second, obnoxious conditions or "nuisances" may be produced in the vicinity of the discharge points if the load of organic matter is introduced into an

¹ A pathogen is any disease-producing microorganism or material.

area too limited for assimilation and disposal by the body of water receiving it.

The first condition requires treatment of the water before it is used for drinking purposes, and the second, treatment of the sewage. Generally both methods are required if the receiving body of water is used as a source of public water supply.

The action of bacteria in the presence of oxygen (air) gradually breaks down all lifeless organic matter into inorganic material (nitrates) suitable for plant food. This reduction takes place as readily in water as on land, since water has oxygen in solution, the supply being constantly replenished from the air and from the microscopic plant growths present in water.

When oxygen is not present in sufficient amounts, bacterial action of a different type takes place, resulting in the formation of obnoxious gases (putrefaction) and the incomplete destruction of the organic matter. This condition will continue until the oxygen balance is restored. During this period the water will be black and foul-looking, with obnoxious odors.

Where sewage is discharged into a body of water having sufficient oxygen to permit oxidation of the material and in the absence of sludge deposits, no nuisances will exist, although from the standpoint of bacterial content such a body of water may be polluted.

Sewage treatment is designed so to lessen the organic load upon the water course that a positive oxygen balance will be maintained in the water and natural oxidation of the organic matter will occur.

A word about sewage may not be out of place at this time. Domestic sewage without industrial wastes contains approximately three pounds of organic matter to each 1,000 gallons. One-half of this is in solution, and one-half in suspension. Of the pound and one-half in suspension, almost one pound will settle out if the sewage is allowed to remain quiet, or nearly so, for a short period. This sedimentation of the settleable solid is the first step in sewage treatment. Sometimes, it is the only step necessary. This rather simple treatment permits about a 33-percent removal of organic matter. Where further treatment is necessary, nature's method is used, but is speeded up, that is, the settled sewage is first brought into intimate contact with oxygen (air) and bacteria associated with the decomposition of organic matter; second, it is allowed to settle in order to free itself of the solids; and, third (and finally), it is discharged into

the water course. This additional and final treatment provides for the complete removal of 80 to 90 percent or more of the original organic matter.

The disposal of the solids accumulated as sludge offers some difficulties. In general, this sludge is allowed to undergo anaerobic digestion in closed tanks until about half the organic matter is digested. It is then dewatered by air drying on open or covered beds, or by vacuum filters, and is used for fill or, in some cases, for low-grade fertilizer. The gases recovered from the digestion are similar to natural gas, highly inflammable, and with a high heat value. This gas is often used to provide heat and a part of the power necessary to operate the plant.²

A test known as the "biochemical oxygen test," and generally referred to as B.O.D., is used to determine the strength (organic content) of sewage and the efficiency of sewage treatment. When this test is used to determine the amount of oxygen required to oxidize the organic matter in the presence of bacteria under a normal temperature (68° F) during a period of five days, it is referred to as the five-day B.O.D. test. While the major portion of the oxygen requirements will be met in five days, some oxygen may be required for twenty days or more.

In order to have a common denominator by which to express the oxygen requirements for oxidation of sewage, the term "equivalent population" is used. It has been found that, for purely domestic sewage, on a five-day basis, the oxygen requirements are 0.17 pounds per person contributing per day. By applying this value to the known daily five-day B.O.D. for any given volume of industrial waste, the strength of that volume of waste can be expressed in terms of the domestic sewage of an equivalent population. For example, the human population connected with sewers tributary to the four sewage treatment plants of the Sanitary District is, according to 1940 U. S. Census figures, 3,915,408. The sewage of this population combined with the industrial wastes also tributary to the treatment plants is equivalent by actual analysis to the domestic sewage of 6,785,700 people.

The sewage systems of Chicago and sixty-two other communities in Cook County collect sewage from buildings and industries within the respective cities and discharge it to the large collecting (inter-

²This discussion on sewage treatment does not attempt to cover all the techniques employed in treating sewage.

cepting) sewers of the Chicago Sanitary District, which is responsible for its ultimate disposal.

This brief nontechnical discussion of sewage and its disposal is given in order that the terms used in this chapter and the three following chapters on sewerage and sewage disposal may be understood more readily.

CITY OF CHICAGO SEWERAGE

Like all Great Lakes cities, Chicago's natural drainage is to Lake Michigan, which therefore normally would receive its liquid waste. On the other hand, the lake is the only source of public water supply. The problem in the other lake cities has been solved by constructing both water treatment and sewage treatment plants. In Chicago, however, it was possible to divert the sewage to another watershed, which drains to the Mississippi River. At first, this method appeared to be a happy solution of the problem of disposing of sewage and protecting the public water supply. It was not the complete solution, however, since it delayed, but did not remove the necessity of constructing sewage-treatment plants. It also delayed and is still delaying the construction of water-treatment plants which are urgently needed. Construction costs incident to the diversion have been heavy, and there has been an added cost for litigation. Diversion has, however, made possible a clean lake front, free from gross pollution, and undoubtedly has been worth its cost.

BRIEF DESCRIPTION OF SEWER SYSTEM The sewer system of Chicago is the combined type which carries both sewage and storm water. This system collects sewage at its point of origin and delivers it to the intercepting sewers of the Sanitary District of Chicago. During periods of heavy rains or melting snow, when the flow exceeds the carrying capacity of the interceptors, the excess overflows to the Chicago River or its tributaries through relief openings.

The system consists of more than 3,400 miles of city sewers, ranging in size from 1 foot to 20 feet in diameter, with approximately 450,000 connections to residences, apartment buildings, commercial buildings, and industries, and serves 99 percent of the population. Catch basins numbering about 187,000 carry away storm flow from street pavements and highways to the sewers. The cost of construction of this system to date exceeds \$100,000,000.

HISTORY AND DEVELOPMENT OF SEWERAGE IN CHICAGO From 1837, when the city was incorporated with an area of 10 square miles,

until 1857 the city had no sewerage except open ditches and a few triangular wooden box sewers built in 1850. During that period the city occupied low ground, 6 to 10 feet above lake level.

As a result of the alarmingly high death rate from typhoid fever and cholera during this period, a Board of Sewerage Commissioners was created by the Illinois Legislature in February, 1855. The duty of the commissioners was as follows:

To examine and consider all matters relative to the systematic and effectual drainage of the City of Chicago, not only of surface water and filth, but also of the soil on which said city is situated, to a sufficient depth to secure dryness in cellars and entire freedom from stagnant water in such manner as best to promote the healthfulness of said city.

Following a report to the commissioners by E. S. Chesbrough, the first sewers were built in December, 1856, emptying into the Chicago River and its branches. A second report in 1858 by E. S. Chesbrough was the basis of the future sewer design in Chicago. Trunk sewers, 5 feet in diameter were laid with laterals and branches of smaller sizes.

Until 1904 a considerable portion of the sewer system discharged directly to Lake Michigan. In that year the city completed the first lake-front intercepting sewers, diverting the sewage flow from Lake Michigan to the Thirty-ninth Street Pumping Station, by which it was pumped through the Thirty-ninth Street conduit to the South Fork of the South Branch of the Chicago River. In 1910 the Lawrence Avenue intercepting sewer system was placed in operation.

Table 30 summarizes the sewer mileage, area, and population growth from 1837 to 1944.

E. S. Chesbrough did not overdesign the original sewer system, and as new additions were added, the system became overloaded. Before 1906 it was apparent to the sewer engineers that most of the area sewered before 1890 was inadequately sewered, as a result of the concentration of building, increased impervious walks and pavements, and the extension of the original sewer system into larger areas than were planned for in the original design. During the period 1913-39 larger and deeper sewers were relaid in annexation areas, and large new auxiliary trunk sewers were constructed, varying from 7 to 18 feet. The new construction included the following systems: Fifty-second Avenue, Albany Avenue, Rockwell Street, Augusta Street, Crawford Avenue, Monroe Street, Broadway or Clifton, Ber-teau Avenue, Magnolia Avenue.

TABLE 30. SUMMARY OF SEWER MILEAGE, AREA, POPULATION
(CITY OF CHICAGO)

| <i>Year</i> | <i>Miles of Sewers</i> | <i>Area (In square miles)</i> | <i>Population</i> | <i>Remarks</i> |
|--------------------------|--|---------------------------------------|-------------------|---|
| 1837 | Drainage by open ditch | 10 | 4,170 | City was incorporated. |
| 1847 | Drainage by open ditch | 14 | ... | ... |
| 1850 | Triangular wooden box sewers built; approximately 1 mile | ... | ... | Cost, \$2,870. In Clark, LaSalle, and Wells streets; from river to Randolph. |
| 1854 | ... | ... | 70,000 | ... |
| 1855 | ... | ... | ... | Board of Sewerage Commissioners was created. |
| 1856 | First sewers built | ... | ... | In State St., from Randolph to river. In Clark St., from river to Erie. In Randolph, from river to Desplaines. |
| 1861 | 54 miles | 24 | ... | 2,400 house drains to system. |
| 1862 | ... | ... | 110,000 | ... |
| 1871 | 161 miles | ... | 300,000 | ... |
| 1875 | 263 miles | ... | ... | As early as 1880 Chicago was listed as having highest ratio of sewers to population. |
| 1885 | ... | 36 | 750,000 | ... |
| 1888 | 492 miles | ... | 850,000 | Nine times the mileage of 1861; Madison St. completely sewer- ed from the lake to city limits at Crawford Ave. |
| <i>After Annexations</i> | | | | |
| 1889 | 680 miles | 170 | 1,070,000 | Jefferson, Lake View, Lake, Hyde Park, and part of Cicero annexed. |
| 1893 | 1,144 miles | ... | ... | ... |
| 1900 | 1,431 miles | ... | 1,700,000 | ... |
| 1904 | ... | ... | ... | First sewage diverted from Lake to 39th St. conduit. |
| 1910 | ... | ... | 2,185,000 | Lake Michigan interceptors in service. North at Lawrence Ave.; south at 39th St. |
| 1913-25 | ... | ... | ... | Beginning of plans and construction of sewers to relieve areas of Augusta Ave. and Crawford Ave. sewers. |
| 1931-39 | ... | ... | ... | Monroe St., Broadway, Berteau, Magnolia, Michigan Ave. sewers built. |
| 1944 | 3,482 miles. | 214 | 3,520,000 | Proposed sewer construction program recommended by Eng. Board of Review. |

INADEQUACY OF PRESENT SYSTEM In general, the existing sewer system is in good physical condition and is adequate for the dry-weather sanitary flow. In many parts of the city, however, it is inadequate for the combined sanitary and storm flows. Recent study by the Bureau of Sewers has shown that approximately only 10 percent of the present sewer system is capable of carrying the five-year frequency storm flow. Larger sewers are needed to carry storm flow.

In 1945 the Bureau of Sewers received forty complaints about flooded basements and 180 complaints about water on the streets. This small number of complaints cannot be used as an accurate index of the inadequacy of the sewer system, however, since the Bureau of Sewers has replied repeatedly to complaints about flooded basement conditions with the statement that the sewer system was inadequate and they could do nothing to relieve local flooded conditions.

The engineers of the Bureau of Sewers report that an investigation and canvass of the areas included in the proposed sewer construction program, discussed later in the report, would confirm the complaints that basements and street pavements at railroad underpasses were flooded several times each year during heavy rainfall.

In the downtown area waste water from extensive air-conditioning equipment, a large transient day-time population, and the use of pumps and ejectors in the drainage systems of buildings with sub-basements cause a heavy dry-weather flow in the sewers. As a result, the sewers are overloaded even during dry-weather periods, and little or no capacity is left for storm overflow.

UNSEWERED AREAS The following paragraph from a report by the superintendent of sewers on the history of the sewerage system in Chicago best summarizes the status of the sewer system and remaining unsewered areas in Chicago.

At present writing, October 1941, of Chicago's 214 square miles of area, only a few (about seven) in the extreme southeast part have not had some sewer work done for their benefit; a few thousand unsubdivided acres throughout the City have access to trunk sewers but need lateral systems or single lines of frontage sewers; and a comparatively few isolated sub-divided streets are still unsewered. There still remains, however, between 35 percent and 40 percent of Chicago's entire area in which sewers are from 25 to 70 years old and require to be relieved by new main outlets and much cross-connecting and some reconstruction.

It is the belief of city officials having intimate contact and long experience with the problems of the Bureau of Sewers and the development of Chicago that inadequate sewers are one of the principal underlying causes of the blighted areas and that the adoption of a properly planned sewer-construction program, which would provide larger and newer sewers, is a "must" in order to co-ordinate housing and other improvements in these areas.

SEWER DESIGN For reasons of economy, the early pioneers in sewer construction did not design sewers to meet estimated future demands, but rather to meet the needs at the time, with some anticipated future growth.

The flow capacity to be provided has been a design problem since the first system was constructed. E. S. Chesbrough, since he was without technical data as to the amount of rainfall and run-off that might be expected, provided for only one inch per hour for storm run-off. The excess was expected to be carried on the streets.

Information about the intensities, frequency, and duration of storms, made available by the U. S. Weather Bureau after its accumulation of other meteorological data and statistics about the trend of city development in the construction of impervious surfaces, such as roofs, walks, and roadways, made it possible for engineers in later years to calculate more accurately the required capacity of the sewer system. Data now available make possible a design based on what is known as the five-year storm frequency. This term is used to designate the sewer's capacity to receive the storm and sanitary flow resulting from the greatest storm known to occur, on the average, once in five years. Although there may be occasional storms of greater intensity, it is not economical to construct sewers larger than those designed to carry the five-year storm-frequency flow.

SEWER CONSTRUCTION PROGRAM On November 28, 1944, an Engineering Board of Review recommended to the mayor and the council a sewer construction program designed to increase the capacity of the present sewers, which are too small for present-day needs. The report included lists of comparative data, such as population benefited, project area, miles of sewer, and range of sewer sizes. The program of the Engineering Board of Review was approved by the city council in January, 1945. The total estimated cost of the entire program was \$84,596,000. A bond issue, amounting to \$58,160,000, to cover part of the cost, was approved by the electorate June 3, 1946.

Approximately 1,257,000 persons and an area of 76.5 square miles will benefit from the program.

THE BUREAU OF SEWERS

ORGANIZATION The Bureau of Sewers is a bureau of the Department of Public Works having supervision and control over all matters relating to drains, sewers, and grades, as set forth in Chapters 8, 31, 82, 119 of the Municipal Code of Chicago. The bureau consists of a superintendent of sewers and such engineers, draftsmen, rodmen, clerks, and other employees as the Chicago City Council may provide by annual appropriation ordinance.

The duties and responsibilities of the superintendent, as established by Chapter 8, paragraph 31, of the code read as follows:

The superintendent of sewers shall have special charge of the construction of all public and private sewers and catch basins laid on or in any public way, except where the cost of such construction is to be paid for wholly or in part by special assessment. He shall have charge of the issuance of all permits for connection with, or repairs to, the sewerage system of the city.

He shall make recommendations with respect to grades to the city council from time to time as the requirements of the city and the public improvements being made therein may demand. He shall also perform such other duties as may be required of him by the commissioner of public works or the provisions of this code.

ACTIVITIES The activities and functions of the bureau include the following: sewer cleaning; sewer repairs; issuance of house drain permits and plan examinations; sewer and drain construction and inspection; sewer design or approval of design; grade control; maintenance of atlases (records) of sewer grades and drains; complaint investigations; river and lake contamination surveys.

DISCUSSION

While the sewage collected by the sewer system of the city is practically all discharged to the intercepting sewers of the Sanitary District and delivered to the treatment plants, there are marginal areas lying between the interceptors and the Chicago River and its branches which still drain to the stream, as well as certain buildings and plants adjacent to the stream which have not changed their building drainage systems to discharge to the interceptors.

In a survey of the Chicago River made in 1944 by a subcommittee of the city council, it was noted that at least seven city sewers serving

marginal areas were discharging domestic sewage and that thirty industries and buildings were likewise discharging sewage and waste directly to the streams. The records of the sewer department showed four additional premises, not noted in the survey, which also discharged sewage directly.

No attempt has been made since that survey to divert the sewage from these marginal areas to the interceptors except by inspection and advice to building and plant owners, in addition to serving notices. These owners were notified that they must comply with the law requiring all private sewers directly connected with waterways of the city and carrying sewage other than roof water, to be disconnected from such waterways and connected to the public sewer system so that the sewage of the city would reach the interceptors of the Sanitary District. Nine of the premises thus served with notices have informed the Bureau of Sewers that they have complied with the notice. There is no record that the remaining twenty-four premises have taken any action, and a spot survey made in July, 1946, indicated that a majority were still discharging sewage directly to the stream. Nothing indicates that the Bureau of Sewers made any systematic effort to force compliance after the issuance of orders and inspections. If data are not already available to the Bureau of Sewers about the sewers in the marginal areas which now discharge domestic sewage directly to the streams, a survey should be made to obtain the necessary information. Following this survey, sanitary sewers should be installed wherever needed in order to eliminate the discharge of domestic sewage from these areas to the streams.

All buildings or plants along the water front which now discharge sewage through private sewers should be notified to conform with the city requirements, and those requirements should be enforced. The records of both the Chicago Bureau of Sewers and the Sanitary District of Chicago, and the findings of the Chicago Cook-County Health Survey, indicate that the following twenty-five buildings or plants are at present discharging sewage or industrial waste in measurable amounts through private and street sewers, in violation of existing law:

Thompson Boat Company
Riverview Park
North Pier Terminal Warehouse

Illinois Naval Armory
Illinois Central Railroad &
Coal Yard
Commercial building (400 feet
south of Van Buren)

| | |
|---|--|
| Continental Paper Grading Company | Riley Tar & Chemical Company |
| Thompson-Taylor Building | Railway Terminal Building |
| Kellogg Warehouse Building | Chicago Warehouse and Terminal Building |
| Cuneo Press | Montgomery Ward Company |
| Material yard (200 feet east of Loomis) | Monast Building |
| Armour Chemical Glue and Soap Works | Republic Box Company |
| Grain elevator (south of Armour) | Peterson Coal Company |
| United States Flat Paper Company | Standard Asbestos Company |
| | Packingtown District (to West Arm of South Fork) |
| | International Harvester Company (31st and Western) |
| | Monarch Leather Company |

The present pollution of the Chicago River will be dealt with more fully in Chapter 7.

In 1941—and no significant changes have been made since that time—about 7 square miles in the southeast section of the city were without sewer service, a few thousand acres were in need of laterals, and a few streets were still unsewered. Privies and septic tanks are used in the populated sections of these areas. The 1940 Federal Census reported the existence of 4,330 privies in Chicago. No city records are available which show the number of privies and septic tanks in use at the present time or their location.

The regulations in regard to privy construction and maintenance are given in Chapters 99 and 167 of the municipal code. The city ordinance specifies that construction shall be in accordance with building department regulations, and with the code regulations as to location, distance from other buildings, and size of vault.

The law requires the services of a licensed night scavenger for maintenance of the privy and removal of vault contents. A permit from the commissioner of public works is required for removal of vault contents; method of removal, transportation, and disposition are prescribed by the code and by the commissioner.

Chapter 99-44 reads as follows: "It shall be unlawful for any person to maintain any privy vault or allow the same to remain upon any premises abutting upon any public way or public place in which is located a public sewer."

A review of the code revealed that the Department of Public Works and the Department of Buildings were jointly responsible for

the regulation of privy maintenance. The Survey staff found that no records were kept, and no action was being taken relative to this responsibility by either department.

The disposal of human feces and sewage from premises not connected to public sewers is a health problem; its supervision and control should be vested in the Chicago Board of Health. Apparently no city department has knowledge of or gives much thought to this rather important problem. In view of the statement by the superintendent of sewers quoted in this chapter, the estimate that 99 percent of the population is tributary to the public sewers may be high. It is probable that at least 50,000 people are served by privies or septic tanks, a type of disposal that requires constant supervision by health authorities.

RECOMMENDATIONS

It is recommended that:

1. The sewer-construction program recommended to the mayor and the city council by the Engineering Board of Review on November 26, 1944, and approved by the council in January, 1945, and by the voters in a referendum vote June 3, 1946, shall be put into operation and completed at the earliest possible date.
2. Sewage now entering the Chicago River and its tributaries from the marginal area between the river bank and the interceptors of the Sanitary District of Chicago shall be diverted to the interceptors.
3. The law prohibiting the discharge of sewage or industrial wastes into the waterways through private sewers shall be enforced.
4. All inhabited properties shall be required to connect with the sewer system wherever and whenever public sewers are accessible.
5. Closer supervision shall be maintained over the construction of privies and the disposal of their contents.
6. All matters pertaining to the disposal of human feces and sewage on premises not connected to public sewers shall be placed under the jurisdiction of the health department.

THE SANITARY DISTRICT OF CHICAGO

by *Ralph E. Tarbett*

THE SANITARY DISTRICT of Chicago, embracing Chicago and sixty-two other municipalities, with an area of 449.12 square miles and an estimated 1946 population of 3,980,000, has two main functions: (1) safeguarding the water supply by keeping out sewage pollution; and (2) treatment of the sewage to prevent undue pollution of the Calumet, Chicago, Des Plaines, and Illinois rivers. This chapter deals principally with the activities and the accomplishments of this organization since its establishment in 1889, and outlines briefly the development and present status of sewage disposal in the Chicago Metropolitan District.

In 1945 the sewage flow reaching the four major sanitary district treatment plants was equivalent to a population load of 6,785,700. Industrial waste made up nearly 3,000,000 of this population equivalent. The major treatment works show complete treatment of sewage in 1945 for an equivalent of 4,299,500 people. It is expected that by 1950 complete treatment will be available for a population equivalent of 6,100,000.

ORGANIZATION OF THE DISTRICT

Lake Michigan has been the source of the municipal water supply since 1840, when Chicago had a population of only 4,470, yet the first sewers in Chicago, built in 1856, were constructed to discharge into Lake Michigan either directly or by way of the Chicago River.

With the rapid growth of the city, both drainage and health conditions became increasingly worse. By 1885 the pollution of Chicago's water supply by the increasing volume of sewage menaced the health of every inhabitant. The Chicago River had become a public nuisance of national fame. During periods of heavy rains, large quantities of accumulated septic sludge from the stream bed were flushed into the lake beyond the Chicago Avenue Crib intake.

The Illinois and Michigan Canal, constructed by the state of Illinois for navigation purposes and completed in 1848, served as a partial outlet for the sewage of Chicago. As early as 1861 water was pumped by the city from the south branch of the river at Ashland Avenue into the canal, but this procedure did not materially alter the condition of the river. Diversion flows from 700–1,000 cubic feet per second subsequent to 1871 still did not prevent the Chicago River from becoming offensive.

In 1886 the City Council of Chicago authorized the creation of a Drainage and Water Supply Commission to study the subject of water supply, sewage disposal, and drainage. The commission reported three possible methods of getting rid of the sewage of Chicago: (1) by discharging it into Lake Michigan; (2) by operating a sewage farm; and (3) by diverting sewage into the Des Plaines and Illinois rivers, maintaining a sufficient dilution of water to prevent nuisance in these streams.

After a study of the three methods, the commission recommended the construction of a drainage canal with a capacity of 10,000 cubic feet per second between the Chicago River and the Des Plaines River. A flow of 10,000 cubic feet per second was considered sufficient to dilute the sewage of a future population of 2,500,000 at the rate of 4 cubic feet per second of lake water per 1,000 persons contributing, assuming no sewage treatment, and also sufficient to keep storm flows from again flushing Chicago River sewage out into the lake. This method was chosen as the basis of the Sanitary District Act.

Under an act of the Illinois Legislature passed on May 29, 1889, the Sanitary District was established by referendum vote in November, 1889. The purpose of the District was to provide a common drainage channel or outlet and the necessary adjuncts for the purpose of diverting the sewage of Chicago and adjacent towns from Lake Michigan, thus protecting the municipal water supply from contamination. The channel capacity was to be such as to provide for the flow of sewage plus a minimum flow of 3.33 cubic feet per second of diluting water for each 1,000 of the population served by sewers. At that time 3.33 cubic feet per second per 1,000 sewered population was considered as the minimum dilution necessary to prevent nuisance in a stream. It should be noted that the Sanitary District was originally established for the sole purpose of diverting sewage from the lake to the Des Plaines River.

POWERS AND SIZE OF THE SANITARY DISTRICT OF CHICAGO

The Sanitary District of Chicago is an independent political subdivision of the state, governed by a board of nine trustees elected by the voters. It possesses certain powers conferred by the Illinois Legislature to enable it to carry out its main purpose. It has no implied powers.

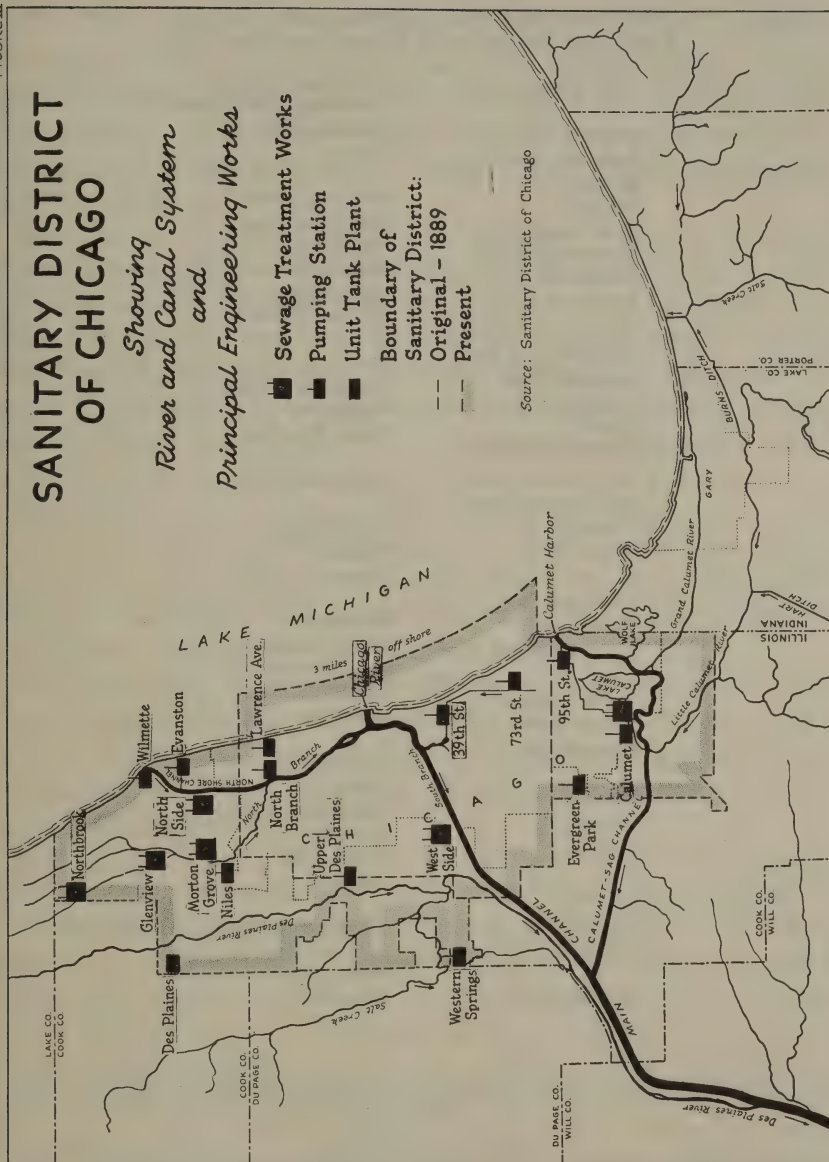
The Sanitary District has the right of eminent domain, possesses limited police power, may be allowed taxes up to a maximum rate of two thirds of 1 percent of the assessed valuation of the property within the District, and may borrow money up to 4 percent of the assessed valuation. The original powers granted the Sanitary District by the state legislature have been increased from time to time to permit the building and operation of sewage treatment and disposal works, the construction and operation of water plants, and the control of the pollution of waters within its boundaries. The Sanitary District is a separate governmental unit which includes the area of the city of Chicago and other incorporated communities. It has no authority over such municipal activities as water supply, construction and maintenance of local municipal sewers, eradication of mosquitoes, and collection and disposal of garbage. Unincorporated areas within the Sanitary District have doubtful legal standing as to service, and under a strict interpretation of the law they might not be allowed to connect to an intercepting District sewer. However, since the Sanitary District taxes property in the unincorporated areas, reasonable requests for connection to an existing intercepting sewer have been permitted. Industries are also permitted and encouraged to make such connections.

The Sanitary District of Chicago came into existence with the corporate boundaries shown in Figure III and an area in 1890 of 185 square miles. Figure III also shows the subsequent annexations and the present boundaries. Sixty-three municipalities are included either wholly or partly within the present Sanitary District (see Table 31). The population and area of the Sanitary District of Chicago for the United States census years 1890 to 1940 are shown in Table 32. Recent estimates by the Chicago Regional Plan Commission indicate a Sanitary District population of 4,544,600 for 1960, or an increase of about 291,000 for each decade.

SANITARY DISTRICT OF CHICAGO

*Showing
River and Canal System
and
Principal Engineering Works*

- Sewage Treatment Works
- Pumping Station
- Unit Tank Plant
- Boundary of Sanitary District:
--- Original - 1889
--- Present



Source: Sanitary District of Chicago

TABLE 31. SIXTY-THREE CITIES, TOWNS, AND VILLAGES WITHIN THE
SANITARY DISTRICT OF CHICAGO—JULY, 1946

| | |
|---------------------|------------------------|
| Alsip (part) | La Grange (part) |
| | La Grange Park (part) |
| Bedford Park | Lincolnwood |
| Bellwood (part) | Lyons |
| Berkeley | |
| Berwyn | McCook (part) |
| Blue Island | Markham (part) |
| Broadview (part) | Maywood |
| Brookfield | Melrose Park |
| Burnham | Midlothian |
| | Morton Grove |
| Calumet City (part) | |
| Calumet Park | Niles |
| Chicago | Northbrook (part) |
| Cicero | Northfield |
| Crestwood (part) | North Riverside |
| | Oak Park |
| Des Plaines (part) | |
| Dixmoor | Park Ridge |
| Dolton | Phoenix |
| | Posen |
| Elmwood Park | |
| Evanston | Riverdale |
| Evergreen Park | River Forest |
| | River Grove |
| | Riverside |
| Forest Park | Robbins |
| Forest View | |
| Franklin Park | Schiller Park |
| | Skokie |
| Glencoe | South Holland (part) |
| Glenview | Stickney |
| Golf | Stone Park |
| | Summit |
| Harvey | |
| Hillside | Westchester (part) |
| Hinsdale (part) | Western Springs (part) |
| | Wilmette |
| Kenilworth | Winnetka |

TABLE 32. AREA AND POPULATION OF THE SANITARY DISTRICT OF
CHICAGO

| <i>Year</i> | <i>Population U. S. Census</i> | <i>Area (in square miles)</i> |
|-------------|--------------------------------|-------------------------------|
| 1890 | 1,070,000 | 185.00 |
| 1900 | 1,638,656 | 185.00 |
| 1910 | 2,308,276 | 358.10 |
| 1920 | 2,986,000 | 395.51 |
| 1930 | 3,901,569 | 442.35 |
| 1940 | 3,962,514 | 442.85 |
| 1946 | 3,980,000 (estimated) | 449.12 |

DILUTION PROJECT

The original plan of the District was to divert the sewage from the Lake Michigan watershed to the watershed of the Illinois River, after dilution with lake water. An unusual material advantage to this project was that only a low, rather narrow ridge separates the two watersheds.

Pursuant to this plan, the Main Drainage Channel was constructed, from Damen Avenue (Robey Street) in Chicago to Lockport, a distance of 28 miles, and was opened for use on January 19, 1900. This channel and other parts of the Dilution Project are indicated on the map on page 113. The channel has a nominal capacity of 10,000 cubic feet per second and enters the Des Plaines River drainage area at Summit, 7.8 miles from Damen Avenue. From this point it parallels the Des Plaines River to Lockport.

Later the channel was extended from Lockport some three miles to a hydroelectric power plant, where three units of the seven now in operation were placed in service in 1907. By this development the waste water power with an average drop of 34 feet was utilized for the corporate purposes of the Sanitary District.

To flush out the North Branch of the Chicago River, the North Shore Channel was dug and opened for service on November 29, 1910. To reverse the Calumet River, the Calumet-Sag Channel was constructed from Blue Island to the Main Channel at Sag and opened on August 26, 1922.

During the same general period (1900–1922), an intercepting sewer was built on the south side of Chicago to pick up sewage entering Lake Michigan between Eighty-seventh Street and Thirty-first Street and discharge it through the Thirty-ninth Street Pumping Station into the South Fork of the South Branch of the Chicago River. Likewise, on the North Side intercepting sewers were constructed by the city in the area from Howard Street to Fullerton Avenue, discharging through the Lawrence Avenue Pumping Station into the North Branch of the Chicago River. In the Calumet region (south of Eighty-seventh Street) the Calumet Intercepting Sewer was built (1915–21) emptying through the Calumet Pumping Station into the Calumet-Sag Channel just west of the Controlling Works at Blue Island.

Before 1922 there was no treatment of sewage entering the chan-

nels of the Sanitary District, except in a small treatment works serving the village of Morton Grove.

The cost of the dilution project has been summarized roughly in Table 33. The total expenditure, as of December, 1922, was \$63,290,962.62.

TABLE 33. APPROXIMATE COST OF DILUTION PROJECT

| <i>Project</i> | <i>Cost as of Dec. 31, 1922</i> |
|--|-------------------------------------|
| Chicago River, Main Outlet and South Branch | \$12,485,778.74 |
| Chicago River, North Branch | 430,946.78 |
| Main Channel | 26,101,678.16 |
| Main Channel Extension | 3,003,738.68 |
| Des Plaines River Diversion | 1,446,727.78 |
| Des Plaines River Improvement (Joliet Project) | 2,333,202.16 |
| North Shore Channel | 3,165,906.13 |
| Calumet-Sag Channel | 14,033,367.44 |
| Special Work | 280,342.49 |
| Calumet River Improvement | 9,274.26 |
| Total | \$63,290,962.62 |

ACCOMPLISHMENT OF DILUTION PROJECT

The dilution project was successful in diverting from Lake Michigan practically all the sewage on the Cook County shore of the lake by taking diversion water from the lake through the Chicago and Calumet rivers (thus reversing the natural flow of the streams) to the Main Channel and also by collecting in the channel system the flow of the sewers that formerly emptied into the lake. The dilution project thus removed dangerous sewage pollution from the water supplies of Chicago and other municipalities on the Cook County shore.

Marked improvement in the typhoid fever death rate resulted from this diversion. No further extensive outbreaks of water-borne typhoid fever occurred after the opening of the diversion works, and there was a steady decline in the death rate. The construction of new water-supply intakes for part of the District, the chlorination of the water, the pasteurization of milk, and the better observance of the rules of sanitation and hygiene have also aided in reducing the mortality rate due to water-borne diseases.

SEWAGE TREATMENT EXPERIMENTS

By 1909 the growth of Chicago and its industries had so increased the pollution that it became evident that means of supplementing dilution by treatment must be found. Accordingly a thorough study of methods of sewage treatment was begun, and testing and experi-

ment stations were established to study the character and the methods of treatment of domestic sewage, stockyards and packinghouse wastes, tannery wastes, and other polluting materials. In October, 1909, the first station to study the sewage was placed in operation at the Thirty-ninth Street Pumping Station. A second station was established in the Union Stock Yards in 1913 for the study of that waste, a third on the North Branch in 1919 to study tannery wastes, and a fourth at the Corn Products Refining Company in 1920 for the study of waste from corn products.

In the packinghouse, tannery, and corn products investigations, the activated sludge process was tested and its limitations were determined. The operation of these testing stations provided experience in design and operation which made possible proper designing of the full-scale plants constructed later.

DIVERSION

The original diversion from Lake Michigan began in 1848 with the opening of the Illinois and Michigan Canal. At first only enough water was pumped from the lake to provide for the needs of navigation. In 1861 the city pumped water into the canal in an attempt to relieve the river of offensive sewage matter. By 1872 the canal level at the summit was lowered, so that a mean flow of less than 300 cubic feet per second was passed into the canal. In 1883 larger pumps were installed at Ashland Avenue to discharge around 1,000 cubic feet per second, but low lake levels in 1891 reduced this to 600 cubic feet per second.

WAR DEPARTMENT LIMITATIONS Before the opening of the Main Drainage Channel, in 1900, the United States Engineer Corps was informed of the proposed diversion. By permit (May 8, 1899), the Secretary of War limited the flow to a diversion of 5,000 cubic feet per second, a rate which would not create velocities injurious to navigation in the Chicago River or its South Branch. This permit was modified from time to time, until, on December 5, 1901, diversion was fixed at 4,167 cubic feet per second.

On June 30, 1910, the Acting Secretary of War issued a permit for the construction of the Calumet-Sag Channel, with a 2,000 cubic feet per second capacity, but limited the total diversion (Calumet and Chicago rivers) to 4,167 cubic feet per second. The negotiations around 1910 indicated that perhaps 10,000 cubic feet per second could be arranged.

In a permit issued by the Secretary of War on March 3, 1925, a diversion of 8,500 cubic feet per second was allowed, subject to the following provisions: The Sanitary District agreed to pay its share of the cost of regulating works on the Great Lakes and to execute a program of sewage treatment of the sewage of a human population of at least 1,200,000 before the expiration of the permit on December 31, 1929.

OPPOSITION TO DIVERSION The first opposition to diversion of sewage from the Sanitary District of Chicago to the Illinois River was voiced by the state of Missouri on behalf of the city of St. Louis. On January 7, 1900, Missouri petitioned the Supreme Court of the United States to enjoin the Sanitary District of Chicago and the state of Illinois from discharging sewage from Chicago through the Main Channel into the Des Plaines and Illinois rivers and thence to the Mississippi River, the source of water supply for St. Louis at that time. The court found that St. Louis had not proved damage, because the flow of the Illinois River never reached the St. Louis intake, and the case was dismissed.

In the meantime, opposition was growing in the Great Lakes states to the amount of the diversion from Lake Michigan. The actual annual average flow measured at Lockport from 1910 to 1930 varied from 6,833 to 10,010 cubic feet per second. The net diversion varied from 6,036 to 8,400 cubic feet per second.

On July 14, 1922, the state of Wisconsin filed an original bill to enjoin any diversion. On October 5, 1925, the court permitted Wisconsin to file an amended bill and allowed Minnesota, Ohio, and Pennsylvania to become cocomplainants. In 1926 Michigan and New York joined in this suit. The master, Charles Evans Hughes, brought in a report in the October term, 1927, whereupon the United States Supreme Court directed him to determine the means which would be required to treat the sewage and to set the dates at which diversion could be gradually cut to the minimum necessary to maintain navigation in the port of Chicago. Mr. Hughes made his report in the October term, 1929. The Supreme Court handed down a decree on April 19, 1930, limiting the annual average diversion to 6,500 cubic feet per second, this to be cut to 5,000 cubic feet per second on December 31, 1935, and finally reduced to 1,500 cubic feet per second on December 31, 1938.

The instructions contained in Mr. Hughes' decision were followed, and since December 31, 1938, the annual average diversion

has remained at 1,500 cubic feet per second, with little likelihood that it will be increased by any action of the Supreme Court. Table 34 gives statistics in regard to diversion from 1900 on.¹

TABLE 34. DIVERSION FROM LAKE MICHIGAN, 1900-1945

| <i>Years</i> | <i>Total Flow at Lockport c.f.s.</i> | <i>Domestic Pumpage Chicago Metro- politan District Sewage c.f.s.</i> | <i>Des Plaines River Inflow; Infiltration and Run-off c.f.s.</i> | <i>Net Diversion c.f.s.</i> |
|---------------|--|---|--|-------------------------------------|
| 1900-04 (av.) | 4,220 | 547 | ... | 3,673 |
| 1905-19 (av.) | 5,401 | 697 | ... | 4,707 |
| 1910-14 (av.) | 7,264 | 857 | ... | 6,407 |
| 1915-19 (av.) | 8,417 | 1,006 | ... | 7,411 |
| 1920-24 (av.) | 8,620 | 1,217 | ... | 7,403 |
| 1925-29 (av.) | 8,894 | 1,488 | 27 | 7,379 |
| 1930-34 (av.) | 8,154 | 1,682 | 9 | 6,462 |
| 1935 | 8,093 | 1,602 | 7 | 6,484 |
| 1936 | 6,607 | 1,712 | 33 | 4,862 |
| 1937 | 6,677 | 1,665 | 23 | 4,989 |
| 1938 | 6,648 | 1,604 | 45 | 4,999 |
| 1939 | 3,132 | 1,586 | 47 | 1,499 |
| 1935-39 (av.) | 6,231 | 1,634 | 31 | 4,567 |
| 1940 | 3,319 | 1,589 | 49 | 1,681 |
| 1941 | 3,341 | 1,610 | 235 | 1,496 |
| 1942 | 3,269 | 1,575 | 166 | 1,528 |
| 1943 | 3,472 | 1,605 | 367 | 1,500 |
| 1944 | 3,412 | 1,606 | 275 | 1,531 |
| 1940-44 (av.) | 3,362 | 1,597 | 218 | 1,548 |
| 1945 | 3,402 | 1,587 | 317 | 1,498 |

No consideration was given by the Chicago-Cook County Health Survey staff in the survey of stream pollution control to the extent of the adequacy or inadequacy of the present limits of permissible diversion from Lake Michigan. There was neither enough time nor a large enough personnel to allow for a complete review of the factual data or collection of additional data upon which to base a recommendation.

SEWAGE TREATMENT WORKS PROGRAM

The treatment-works program of the Sanitary District lagged until 1919, except for the sewage treatment experiments and the building in 1914 of a small Imhoff tank to serve about one thousand people at Morton Grove on the Des Plaines River. A program for the construction of sewage treatment tanks was adopted after 1919. This program was initiated partly as a result of the sewage-treatment ex-

¹ The budgeting of the cubic-feet-per-second diversion and control of the method of the river and channel system will be discussed on page 127.

periments and partly because the pressure exerted by the lake states in opposition to diversion indicated the probability that it would be reduced below 4,167 cubic feet per second.

An amendment to the Enabling Act (passed by the Illinois legislature and approved June 21, 1921) ordered the Sanitary District to set up some efficient method of treating sewage other than by water dilution. It was specified that adequate care should be provided for an increase of not less than 300,000 population each year until facilities for the treatment of sewage were available for at least 60 percent of the 1921 population (approximately 1,800,000 persons). Table 35 indicates the building program which resulted, including the necessary intercepting sewers, pumping stations, and outlets to the channel systems.

TABLE 35. SEWAGE TREATMENT WORKS OF THE SANITARY DISTRICT OF CHICAGO

| <i>Works</i> | <i>First Contract</i> | <i>Date Put in Operation</i> | <i>Date Closed Down</i> |
|------------------------|-----------------------|------------------------------|-------------------------|
| Morton Grove | | | |
| Imhoff | Aug., 1914 | Dec., 19, 1914 | |
| Trickling Filter | 1919 | May, 1920 | Dec. 24, 1942 |
| Des Plaines River | May 1, 1919 | Aug. 2, 1922 | Oct. 15, 1931 |
| Calumet (old) | | | |
| Imhoff | Oct. 13, 1920 | Sept. 11, 1922 | Sept. 16, 1935 |
| Glenview | May 17, 1923 | Oct., 1924 | July 14, 1942 |
| Northbrook | Feb. 21, 1924 | April, 1925 | |
| North Side | Aug. 9, 1923 | | |
| Partial operation | | Oct. 3, 1928 | |
| Complete | | July 1, 1930 | |
| West Side | | | |
| Battery A | Oct. 14, 1926 | June 2, 1930 | |
| Battery B | Apr. 2, 1928 | July 14, 1930 | |
| Battery C | Feb. 26, 1931 | April 29, 1935 | |
| Calumet (Extension) | | | |
| Activated sludge | May 5, 1931 | Dec. 16, 1935 | |
| Southwest ^a | Feb. 14, 1935 | May 23, 1939 | |

^a A partial plant, as yet (1946) incomplete.

The District's sewage treatment plants provide for removal of settling solids in all plants and for complete treatment in some. At the present time the North Side and Calumet Works give complete treatment to the normal and dry-weather flow as will the West-Southwest Works when completed.

INTERCEPTING SEWERS AND OVERFLOWS

The area within the Sanitary District of Chicago is sewered chiefly on the combined system, the sewers carrying both sewage and storm

run-off. The towns of Glencoe, Winnetka, Northfield, and part of Wilmette, however, have separate systems, the Sanitary District picking up only the discharge from the sanitary sewers. The storm sewers discharge to Lake Michigan.

The District operated 178 miles of intercepting sewers during 1944. The District reports that during dry-weather periods this system collects approximately 99 percent of all the sewage originating within the limits of the Sanitary District. This statement is verified by the 1940 census distribution of the 3,962,514 population within the project areas, which indicates that only 47,206 people live in sections classified as "rural and not connected."

During rain-storm periods the run-off from precipitation is also collected in the system at the rate of one-half inch per 24 hours. During storm periods in excess of this rate of precipitation the discharge into the intercepting sewer systems is approximately 25 percent more than the dry-weather flow. The excess storm run-off and sewage is discharged directly into the near-by water courses or the lake. With a combined sewer system, it is not practicable to provide treatment for the excess sewage and storm water, since this combined storm flow frequently may have a volume ten times greater than the normal dry-weather flow.

Although the Sanitary District has no record as to the number of times per year the combined sewer system in Chicago discharges excess water to the channel system, via the control chambers at the interceptors, a review of the 1945 "Precipitation of Chicago Table" prepared by the city indicates that such overflows occurred at least thirty times in that year.

There are sixteen sewage pumping stations in the District in addition to the pumping equipment at the sewage treatment works, one operated by the city of Chicago, three by Burnham, one by Calumet City, and eleven by the Sanitary District.

There are 307 storm relief overflows to the channel system. The inspection and maintenance of the intercepting sewer system and the operation of the control gates and take-offs are the responsibility of the Hydraulic Control Section described on page 127.

In 1944 the River Survey Committee of the city council, while making a survey of the sewer outlets to the Chicago River, found eleven sewer diversion chambers out of order and discharging dry-weather flow to the river instead of to the intercepting sewer. During an inspection trip of the river on July 12, 1946, it was noted that

eight sewers were discharging to the channel system because of faulty operation of the diversion chambers. To remedy this condition the District has already increased the sewer-control crews and the number and frequency of inspections of the intercepting sewer system. Diversion chambers were inspected about once in every two months before the period of the Chicago-Cook County Health Survey. Since no flow measurements were made during the Survey of the discharge to the river from faulty diversion chambers, an estimate of the population equivalent of the combined discharge from these chambers would be most difficult. Nevertheless, it is a pollution factor which should be rectified and kept to a minimum. An inspection schedule regulated by the frequency of rain storms throughout the year would aid in maintaining the intercepting sewer system and prevent the discharge of raw sewage to the channels through the relief chambers.

SEWAGE TREATMENT PROJECTS

It was recognized as early as 1909 that the Calumet region south of Eighty-seventh Street should be treated as a separate project. The scattered small villages on the North Branch of the Chicago River were also set apart for individual consideration. In 1920 a study of the Sanitary District indicated that the District should be divided (excluding three small works on the North Branch) into five general sewage-treatment projects: North Side, West Side, Southwest, Des Plaines River, and Calumet.

Eventually the Des Plaines River project was merged with the Southwest and West Side projects and handled in a co-ordinated way at the treatment plant on the 501-acre tract acquired originally for the West Side project in Stickney. Since 1939 the Des Plaines River project has been sewerred to the West Side.

PRESENT STATUS OF SEWAGE TREATMENT BY PROJECTS At the close of 1945 the following sewage treatment units were in operation: four sewage treatment works, with a combined capacity of 1,258 million-gallons-per-day average flow, and three small outlying treatment works. Table 36 shows the type, treatment capacity, pumping capacity, and method of sludge disposal of the four major works.

At the time of the Survey, the Southwest Works was not entirely completed and was unable to treat more than 280 million gallons per day by the activated sludge process. The balance, 120 million gallons per day, is given preliminary treatment only.

TABLE 36. FOUR MAJOR SEWAGE TREATMENT WORKS BY TYPE OF SERVICE

| <i>Sewage-Treatment Works</i> | <i>Type</i> | <i>Average Treatment Capacity m.g.d.</i> | <i>Pumping Capacity m.g.d.</i> | <i>Method of Sludge Disposal</i> |
|-------------------------------|------------------|--|--------------------------------|---------------------------------------|
| Calumet | Activated sludge | 136 | 270 | Drying and incineration or sale |
| North Side | Activated sludge | 250 | 388 | Disposal at South-west Works |
| Southwest | Activated sludge | 400 | 776 | Drying and incineration or sale |
| West Side | Imhoff Tank | 472 | 776 | Drying on open beds, disposal on dump |

The 1945 population of the Sanitary District is estimated at 3,980,000. By deducting this figure from the actual population-equivalent load reaching the four major sewage treatment works in 1945, one obtains an industrial population equivalent of 2,805,700 for that year.

Table 37 shows the population-equivalent loads reaching each treatment works, the average percent reduction of organic matter, and the equivalent population load kept from the canal system by sewage treatment.

THE NORTH SIDE SEWAGE TREATMENT PROJECT The North Side Works is an activated sludge plant with a present average flow of 200 million gallons per day. It was placed in service on October 3, 1928, and treats the sewage, largely domestic in character, from an area in the northeasterly portion of the District. The plant is located in the village of Skokie, just north of Howard Street, Chicago, and west of the North Shore Channel, and serves an area of 115 square miles with a 1940 population of 1,019,967.

In 1945 the operating data for the plant indicated a 93.5 percent reduction in the organic matter in the sewage treated, as measured by the five-day biochemical oxygen demand. The plant effluent goes into the channel, and sludge from this plant is pumped to the Southwest Works for disposal, a distance of 17.5 miles.

THE WEST SIDE SEWAGE TREATMENT PROJECT The West Side Works is an Imhoff tank plant with an average capacity of 472 million gallons per day. The plant was placed in service June, 1930, and treats sewage of domestic origin and a considerable amount of industrial waste. In 1945 the organic matter in the 418.7 million gallons of sewage treated per day at the works was reduced by 36 percent, measured by the 5-day biochemical oxygen demand. The plant effluent is

TABLE 37. SEWAGE TREATMENT WORKS BY POPULATION EQUIVALENT LOADS, 1943, 1944, 1945

| | POPULATION EQUIVALENT (By actual analysis) | | | AVERAGE PERCENT REDUCTION | | | POPULATION EQUIVALENT LOAD REMOVED BY TREATMENT | | |
|--|---|-----------|-----------|---------------------------|------|------|--|-----------|-----------|
| | 1943 | 1944 | 1945 | 1943 | 1944 | 1945 | 1943 | 1944 | 1945 |
| Calumet | | | | | | | | | |
| 403,000 | | 420,900 | 342,700 | 87.4 | 87.1 | 89.5 | 352,000 | 366,600 | 306,000 |
| North Side | | | | | | | | | |
| 1,009,000 | | 1,034,000 | 1,092,000 | 93.5 | 94.9 | 93.5 | 943,000 | 981,200 | 1,021,000 |
| Southwest | | | | | | | | | |
| 3,158,000 | | 3,815,000 | 2,896,000 | 51.4 | 51.6 | 79.9 | 1,623,000 | 1,968,500 | 2,313,900 |
| West Side- | | | | | | | | | |
| 2,024,000 | | 1,880,000 | 2,455,000 | 22.2 | 34.8 | 36.0 | 449,000 | 654,200 | 883,800 |
| Total | | | | | | | | | |
| 6,594,000 | | 7,149,900 | 6,785,700 | | | | 3,367,000 | 3,970,500 | 4,525,400 |
| Deduct for Southwest sludge resettled at West Side Works | | | | | | | | 413,600 | 225,900 |
| Net | | | | | | | | 3,556,900 | 4,299,500 |

discharged to the main channel, and sludge is disposed of by pumping to open-air drying beds and sludge lagoons. Last year the sludge removed from the Imhoff tanks was distributed as follows: 438,236 cubic yards to drying beds, and 125,002 cubic yards to lagoons.

This treatment plant is located south of West Pershing Road and west of South Fifty-second Avenue in Stickney on a site of 501 acres. The population of the project area is 1,487,773.

THE SOUTHWEST SEWAGE TREATMENT PROJECT The Southwest Works is an activated sludge plant located on the 501-acre site of the West Side Works and designed for an average flow of 400 million gallons per day, with equipment designed for dewatering the excess sludge and its incineration or its sale as fertilizer. The first battery of aeration tanks went into service in June, 1939. On March 20, 1940, the opening of Racine Avenue Pumping Station completed the pickup sewage, except for some minor sewers. At present the plant serves an area in the central portion of the District lying south of Taylor Street and of the Main Drainage Channel and north of Eighty-seventh Street, which includes the industrial waste of the Stockyards and "Packing Town."

In 1945 the operating data for the Southwest Works showed a 79.9 percent reduction of organic matter, as measured by the five-day biochemical oxygen demand, in the 341-million-gallons-per-day sewage treated. A larger flow of sewage received complete treatment with activated sludge than at any time since the Stockyards waste was brought in through the Southwest interceptor. Sludge containing 34,236 tons of solids (dry basis) was dewatered with mechanical drying equipment.

Sludge stored in lagoons in 1945 amounted to 66,521 tons of solids (dry basis), 64 percent from the Southwest Works, 30 percent from the North Side Works, and 6 percent from the West Side Works. This quantity of solids is equivalent to approximately 3 million tons of liquid sludge. The sludge lagoons for the West-Southwest Works are approximately five miles below the treatment plants adjacent to the Main Channel. This method of disposal is temporary, pending the completion of the Southwest Works.

The area tributary to the Southwest Works has a human population of 1,128,000, plus an industrial population equivalent of 1,768,000.

The construction program approved by the District in May, 1940, provided for enlargement of the Southwest Works to a nominal ca-

capacity of 900 million gallons per day average flow, and the addition of facilities to provide complete treatment of the effluent from the Imhoff tanks at the West Side Works.

CALUMET SEWAGE TREATMENT PROJECT The present Calumet Sewage Treatment Works, located between 126th and 130th Streets, east of the C. & W. I. Railroad and west of the Michigan Central, is an activated sludge plant with an average capacity of 136 million gallons per day. It replaced the original Calumet Imhoff plant in December, 1935. From 1922 to 1935 the old Calumet plant served the rapidly developing industrial area south of Eighty-seventh Street. The population of the project area, south of Eighty-seventh Street tributary to the Calumet Works, is about 327,000. The total project area is 95 square miles, of which 42.6 square miles are sewered to the plant.

The Calumet Treatment Project area contains the largest portion of sewered areas in the Sanitary District of Chicago not connected to treatment works, including the communities of Evergreen Park, Mount Greenwood, Midlothian, South Holland, Posen, and Dolton. The sewers in these communities discharge directly into the channel system. The population of this sewered nonconnected area is 26,118.

In 1945 the Calumet Sewage Treatment Works reported an 89.5 percent reduction in the organic matter of the sewage treated, as measured by the 5-day biochemical oxygen demand. The plant effluent is discharged to the Calumet-Sag Channel. Sludge disposal is by drying and incineration or sale. However, due to major repairs in the drying equipment, sludge lagoons received about one fourth of the total solids in 1945.

MISCELLANEOUS SEWAGE TREATMENT WORKS Northbrook Sewage Treatment Works on the North Branch of the Chicago River, an Imhoff trickling filter type, with sludge drying beds, provides complete treatment for about 0.20 million gallons per day.

A unit Imhoff tank in Glenview on the North Branch provides preliminary treatment for about 0.15 million gallons per day and the sludge is removed by tank truck to the North Side Works.

An Imhoff plant located in the northwest part of Des Plaines treats about 0.1 million gallons per day, and sludge is removed to the North Side Works.

Oak Forest Institution Imhoff tank, which is not operated by the Sanitary District, discharges its effluent into the Calumet-Sag Channel.

THE DIVERSION SCHEDULE OF THE HYDRAULIC CONTROL SECTION

The Hydraulic Control Section is charged with the duty of regulating the diversion of water from the Great Lakes watershed and all other operations having to do with the flow of sewage.

The Sanitary District River and Canal System comprises the following:

The North Shore Channel and North Branch of the Chicago River.—The discharge from this system is to the South Branch of the Chicago River at its junction with the Chicago River at Lake Street. Inflow into this system is composed of the diversion to the North Shore Channel at Wilmette Harbor; run-off from the North Branch at Foster Avenue dam; storm pumpage at North Branch Pumping Station; storm discharge from the sewer controls; and effluent from the North Side Treatment Works.

The Calumet System.—The discharge from this system enters the Main Channel of the Drainage Canal at Sag Junction. The inflow includes: (a) direct diversion at Calumet Harbor; (b) portion of direct diversion to Grand Calumet River by U. S. Steel Corporation and effluent of Gary Sewage Treatment Works; (c) run-off of Grand Calumet, Little Calumet, and Calumet rivers; (d) effluent from Calumet Treatment Works; (e) a portion of the effluent from the Hammond Treatment Works and from other municipalities in both Indiana and Illinois; (f) storm pumpage from six pumping stations; (g) storm discharge from the sewer controls.

The Chicago River, South Branch of the Chicago River, and Main Channel.—Inflow into this system is composed of the direct diversion to the Chicago River described in the first canal system; the inflow at Sag Junction from Calumet-Sag Channel, as described in the second canal system; the effluent from the West-Southwest Treatment works; the storm pumpage at Racine Avenue Pumping Station; the storm discharge from the sewer controls; and the storm inflow from the Des Plaines River at Willow Springs spillway, Lemont weirs, and at Romeo.

DIVERSION FROM GREAT LAKES WATERSHED While it is generally known that the amount of water that may be diverted from the Great Lakes Watershed has been limited by Supreme Court decree not to exceed an annual average of 1,500 cubic feet per second, it is not generally known that this amount does not come entirely from Lake Michigan, but includes the natural run-off from precipita-

tion falling on the drainage area of the Chicago River System and the Calumet River System and water pumped from the lake by the United States Steel Corporation for cooling water.

The limitation to an annual average of 1,500 cubic feet per second is in addition to domestic pumpage. The amount diverted is determined by deducting from the flow at Lockport the amount of water pumped by the city of Chicago into the water mains and the pumpage of other water works from Lake Michigan or from underground sources within the Sanitary District and the overflow from the Des Plaines River spillways.

DIRECT DIVERSION AND PRECIPITATION RUN-OFF The diversion from the Great Lakes-St. Lawrence system, or watershed, is composed of the direct diversion from Lake Michigan at the Wilmette, Chicago, and Calumet harbors; the precipitation run-off from the drainage areas of the Chicago River (approximately 317 square miles); and from that part of the Little Calumet River tributary to the Sanitary District system, approximately 320 square miles. The flow of the Grand Calumet River includes the pumpage from the lake at Gary by the United States Steel Corporation of from 500 to 700 cubic feet per second of cooling water, which is discharged into the Grand Calumet River at Gary. At the junction of the Grand Calumet River and the Indiana Harbor Ship Canal, the major part of the flow of the Grand Calumet River is diverted to the Indiana Harbor Canal and thence into Lake Michigan. In 1945 the direct diversion flow in the Grand Calumet River westward of the Indiana Harbor Canal was approximately 112 cubic feet per second.

The average monthly direct diversion from Lake Michigan at Calumet Harbor has been materially increased since 1944 in order to reduce, insofar as possible, the pollution in the southern part of the lake. This increase in direct diversion was made at the request of the mayor of Chicago and the Chicago Department of Public Works. The additional 1,500 cubic feet per second diversion through the Calumet-Sag Channel recommended by the Fisher report² as a temporary expedient during the war emergency was not adopted. Table 38 gives the approximate monthly diversion in 1945 at Wilmette, Chicago, and Calumet harbors, and the portion of flow from the Grand Calumet River in Indiana.

² L. M. Fisher (Senior Sanitary Engineer, U. S. Public Health Service), "Report on Pollution of Lake Michigan in the Vicinity of Chicago's Southerly Water Intakes," January, 1942; made by request of Herman N. Bundesen, M.D., president, Chicago Board of Health, to the Surgeon General, U. S. Public Health Service (unpublished).

TABLE 38. 1945 APPROXIMATE MONTHLY DIRECT DIVERSION IN CUBIC FEET PER SECOND

| <i>Month</i> | <i>Total</i> | <i>Wilmette Harbor</i> | <i>Chicago Harbor</i> | <i>Calumet Harbor</i> | <i>Grand Calumet</i> |
|--------------|--------------|----------------------------|---------------------------|---------------------------|--------------------------|
| January | 1,372 | 50 | 908 | 340 | 74 |
| February | 854 | 76 | 526 | 186 | 66 |
| March | 993 | 85 | 459 | 375 | 74 |
| April | 1,016 | 105 | 633 | 191 | 87 |
| May | 798 | 81 | 386 | 222 | 109 |
| June | 1,780 | 137 | 550 | 952 | 141 |
| July | 1,640 | 139 | 506 | 846 | 149 |
| August | 1,691 | 104 | 456 | 990 | 141 |
| September | 1,232 | 91 | 367 | 638 | 136 |
| October | 884 | 110 | 385 | 262 | 127 |
| November | 847 | 95 | 318 | 308 | 126 |
| December | 662 | 89 | 227 | 225 | 121 |
| Average | 1,110 | 97 | 477 | 424 | 112 |

CONTROL OF FLOW IN THE CANAL SYSTEM The flow in the Sanitary District River and Canal System is controlled, insofar as possible, by regulating the direct diversion from Lake Michigan at Wilmette, Chicago, and Calumet harbors and by regulating the total discharge from the system at Lockport. The discharge is increased during periods of storm run-off to minimize or prevent reversals of flow in the Calumet River, with the discharge of polluted matter into Lake Michigan.

The Wilmette Control Works are located at the head of the North Shore Channel. No pollution has been discharged into the lake at Wilmette since July, 1943, when due to a severe rain storm, the water in the channel overflowed the lock for about six hours.

The controlling works at the mouth of the Chicago River prevent reversals of the polluted Chicago River into Lake Michigan during storm-run-off periods or marked drops in lake levels. The locks were completed in September, 1938, but the controlling works were not watertight until 1940, when the United States breakwater and pier which form part of the enclosure were sealed. The United States War Department Regulations for Operation of the Controlling Works establish the elevation at which the water level in the Chicago River shall be maintained. In 1945 the Sanitary District reported the river level above the lake level during periods of storm run-off or lake level fluctuations eighteen times during the year for periods greater than 45 minutes. The District reports a total of 222 occasions in 1940 when the river was above lake levels for varying periods. Should the lock gates be out of service for repair or inspec-

tion during the above periods, pollution of the water supply might result.

The control works of the Calumet system are located at Blue Island, fourteen miles inland from the mouth of the Calumet River, and the only method of preventing or minimizing the effect of reversals of the Calumet River during storm-run-off periods is to increase the discharge at Lockport and reduce the inflow at Wilmette and Chicago harbors. If the inflow from storm run-off exceeds the capacity of the Calumet-Sag Channel (2,800 cubic feet per second), a reversal will occur. The procedure of the District is to maintain an increased flow in the Calumet-Sag Channel for some time after the reversal periods end, in order to pull back into the Calumet River as much of the pollution as possible.

The District reported four reversal periods during 1944 and two in 1945 of apparently sufficient duration and velocity to carry polluted water into Calumet Harbor. The periods of reversal and the hours of duration in each year were as follows:

| <i>1944 Period</i> | <i>Duration in Hours</i> | <i>1945 Period</i> | <i>Duration in Hours</i> |
|--------------------|--------------------------|--------------------|--------------------------|
| March 5-6 | 34 | May 3-4 | 30 |
| March 14-17 | 60 | May 15-17 | 52 |
| March 29-30 | 32 | | |
| April 23-24 | 20 | | |
| <hr/> | | <hr/> | |
| Total | 154 | | 82 |

SEWER OVERFLOWS TO LAKE MICHIGAN IN SANITARY DISTRICT OF CHICAGO Kenilworth has one 36-inch relief overflow from the intercepting sewer system about two miles north of Wilmette Harbor.

In Evanston four relief overflows from the municipal system are located along the lake as follows:

| <i>Location</i> | <i>Inches</i> |
|-------------------|---------------------|
| University Place | 42 (extended as 36) |
| Davis Street | 48 |
| Main Street | 48 |
| South City Limits | 30 |

In Chicago there are no relief overflows from the sewer system discharging to the lake. There are, however, 14 storm outlets, 573 surface or gutter drains, 8 small sewer or cesspool overflows, and 4 secondary water outlets.

LABORATORY CONTROL

The Sanitary District has laboratories at each of the treatment plants, where samples are examined daily for the control of the sewage treatment processes and to determine the efficiency of treatment. In addition, there are three laboratories at Joliet, Marseilles, and Peoria, respectively, on the Illinois River. These laboratories are maintained to check the condition of the river water and to determine the extent to which the organic load delivered to the river at Lockport has been oxidized and destroyed through natural processes.

In addition to the routine plant-control work, there is a daily examination of samples from points in the channels. Studies of industrial wastes are carried on continuously and occasional surveys of the channels are made.

The laboratory examinations are made in accordance with the standard methods of sewage analyses of the American Public Health Association.³ Analyses are largely chemical in nature, although bacteriological examinations are made when indicated. The laboratory staff consists of fifteen graduate chemists together with a larger number of assistants. The work of these laboratories has been outstanding in the sewage and industrial-waste field.

POLLUTION CONTROL

Under an amendment of the Sanitary District Act in 1944, the state legislature authorized the Sanitary District to assume the control of stream pollution within its corporate areas. On July 11, 1946, the Sanitary District passed an ordinance setting up the machinery carrying out the provisions of the amendment to the general act and indicating the field in which it proposed to operate. In being granted the powers which were in the State Sanitary Water Board, the Sanitary District has been given authority to control stream pollution only, and is assuming that such control relates solely to the pollution of streams by water-borne pollution.

The Cook County Department of Public Health is responsible under the general health laws of the state for the proper disposal of human feces and sewage in the protection of public health. The new law requiring the Sanitary District of Chicago to abate water pollution may lead to an overlapping of authority in some categories of

³ American Public Health Association, *Standard Methods for the Examination of Water and Sewage*, 9th ed., New York, American Public Health Association, 1946.

pollution, especially with reference to individual homes, schools, institutions, transient camps, recreational areas, and the like.

It seems desirable that the Sanitary District of Chicago and the Cook County Department of Public Health mutually define their respective spheres of activity to ensure full and adequate control of the whole field of water pollution.

COMMENTS

Since its establishment in 1889, the boundaries of the Sanitary District have been extended by amendments of its charter by the Illinois Legislature to include the areas immediately adjacent thereto. The urge for such extension has generally arisen from local authorities. It is assumed that this policy will be followed in the future.

The present plans for development include the completion of the intercepting sewer system and of the major sewage treatment plants of the Sanitary District. Within the area of the Sanitary District are some relatively small sewered areas and a few industrial plants which at present discharge untreated sewage and industrial wastes to the streams or channels within the District. Untreated sewage and industrial wastes are also discharged to the waterways from certain untreated marginal areas between the intercepting sewer and the waterways where the connection to the intercepting sewer of the local outlet is some distance back from the waterway. The pickup of this sewage and industrial waste and the correction of these conditions is part of the future program of the Sanitary District. The ordinance adopted in 1946 gives the Sanitary District the power to control stream pollution within its boundaries. This power should be exercised by the District to bring about the complete clean-up of the various streams within its area, in order to reduce the organic load now carried by the streams to a practical minimum.

By necessity, the combined sewers of the various municipalities in the Sanitary District overflow to the watercourses, in order to prevent the excessive flows of combined sewage and run-off during heavy rains. As a result, there is intermittent discharge to the streams of polluting material. In general, such a situation cannot be remedied.

Since a combined sewer system already exists in the city of Chicago, it would be impracticable to build separate systems. The cost would be prohibitive. The storm overflows pass to the river systems, which in general can be flushed after a storm, so that the relatively small amounts of storm-water pollution can be swept away. However,

where new sewer systems are installed or where major extensions to existing systems are made on the North Branch of the Chicago River (outside of Chicago) and the Des Plaines and the Little Calumet rivers, they should be planned on a separate basis so that no sanitary sewage can be discharged into the waterways. In particular does it appear desirable where the river and its banks are used for recreation by the public, as is the case with the holdings of the Forest Preserve District of Cook County on the Des Plaines River and the North Branch of the Chicago River (outside Chicago).

RECOMMENDATIONS

It is recommended that:

1. The territorial boundaries of the Sanitary District of Chicago shall be extended to areas within Cook County immediately adjacent to its present boundaries.
2. Steps shall be taken by the appropriate authority to require treatment of any sewage or industrial waste now being discharged directly to the waterways within the Sanitary District of Chicago.
3. Better control shall be maintained over storm-overflow outlets to prevent discharge of dry-weather sewage flow to the waterways.
4. The Sanitary District of Chicago shall require that in the construction of new sewer systems or major extensions to existing systems on the Des Plaines River, the North Branch of the Chicago River (outside Chicago), and the Little Calumet River such systems be constructed on separate bases, so that no sanitary sewage will be discharged to the waterways.
5. The Sanitary District of Chicago shall require, at the earliest practicable date consistent with financial ability, the reconstruction by those municipalities on the Des Plaines and the North Branch of the Chicago River (outside the city of Chicago) of existing combined sewer systems to separate sewer systems in order to reduce the pollution on these streams to a minimum and afford waterways at the highest recreational value.
6. The Sanitary District of Chicago shall require that any new industrial plant locating within its boundaries shall arrange to treat its wastes properly, either by connection to the Sanitary District intercepting sewer and sewage treatment system or by proper treatment at the plant before discharge to the waterways.
7. The Sanitary District of Chicago and the Cook County Department of Public Health shall draft a statement of policy relative to

their respective spheres of responsibility in water-pollution control within the boundaries of the Sanitary District.

8. After it has removed from the Chicago River all avoidable or illegal sources of pollution, the United States Public Health Service shall be called upon, through the proper channels, to make engineering observations and studies of the river and associated watercourses to determine the adequacy of the present rate of diversion to accomplish its stated objective.

MUNICIPAL SEWER SYSTEMS IN COOK COUNTY

by *Raymond I. Leland*

SEWERAGE AND SEWAGE-DISPOSAL SYSTEMS in Cook County, exclusive of Chicago, were surveyed in two groups: (1) sewerage systems in use in municipalities and (2) sewage treatment and disposal facilities in rural areas.¹ The two groups are also discussed separately in this chapter.

MUNICIPAL SEWER SYSTEMS

Nineteen of the eighty-nine municipalities in Cook County, with a total population of 13,523, have no municipal sewer systems for collection of domestic sewage. A number of these, however, have partial or complete municipal storm-water sewers, some of which carry domestic sewage and septic-tank effluents. These storm-water sewers and drains, however, have not been designed to carry sewage and cannot be incorporated ordinarily in any comprehensive sewer system.

The remaining seventy municipalities operate municipal sewers for a total population of 596,323. Forty-six municipalities have combined sewer systems which serve 499,510 persons, 20 municipalities operate sewer systems serving 70,137 persons, and four municipalities have combinations of separate and combined sewers serving 26,676 persons. In about ten municipalities, 90 percent or less of the population are connected to the sewer system. This condition exists primarily in towns with 3,000 or less population.

In general, municipalities with municipal sewer systems have adopted ordinances requiring the householder to connect to the sewer if it is accessible. Many of the municipalities where there are no public sanitary sewers, or where the sewers are not reasonably accessible, have adopted ordinances requiring residents to provide suitable sub-

¹ Tabulations giving detailed statistics in regard to the sewerage and sewage treatment facilities of each of the municipalities in Cook County are on file at the District Office of the U. S. Public Health Service (610 South Canal Street, Chicago 7, Illinois).

surface disposal systems for individual septic tank effluents, constructed in accordance with requirements of the Cook County Department of Public Health. If a permit is required it is issued by the building department in connection with the home permit. Inspection by the building or plumbing inspector is often made during construction.

Privies still exist in outlying areas of many of the communities. Most municipalities have ordinances prohibiting or regulating privies, but enforcement is lax. Inspection of these facilities is made only upon receipt of complaint and is not on a routine basis.

MUNICIPAL SEWAGE TREATMENT FACILITIES

MUNICIPALITIES WITHIN SANITARY DISTRICT OF CHICAGO Sixty-two municipalities, exclusive of Chicago, lie either wholly or partially within the boundaries of the Sanitary District of Chicago. These municipalities have a total population of 542,795. Table 39 indicates the status of sewage-treatment facilities in the municipalities within the Sanitary District of Chicago.

TABLE 39. SEWAGE TREATMENT FACILITIES FOR MUNICIPALITIES WITHIN THE SANITARY DISTRICT OF CHICAGO

| | <i>Number of Municipalities</i> | <i>Population 1940</i> |
|--|-------------------------------------|----------------------------|
| Not sewered | 5 | 4,372 |
| Sewered, but no sewage treatment | 9 | 25,287 |
| Sewage treated at municipality | 1 | 1,265 |
| Sewage treated at major S.D.C. treatment works | | |
| North Side plant | 12 | 120,304 |
| West Side plant | 27 | 327,030 |
| South West plant | .. ^a | ... ^a |
| Calumet plant | 8 | 64,537 |
| Totals | 62 | 542,795 |

^a Serves Chicago only.

The treatment facilities provided at the major Sanitary District plants are discussed in the report on the Sanitary District of Chicago. In addition to the major plants, the Sanitary District operates small treatment plants for the treatment of sewage from Northbrook and portions of Glenview and Des Plaines. The effluent from these plants is discharged to near-by water courses. Six municipalities within the Sanitary District, with a population of 4,530, are not sewered, and nine municipalities, with a population of approximately 25,000, are sewered but at the present time the sewage is discharged without treatment directly to water courses.

MUNICIPALITIES OUTSIDE SANITARY DISTRICT OF CHICAGO
Twenty-nine municipalities in Cook County, with a total population of 67,888, lie outside the Sanitary District of Chicago. Thirteen of these municipalities, with a population of 8,993, are without municipal sewer systems. These municipalities depend for their sewage disposal upon privies or septic tanks, the latter often without adequate subsurface disposal fields. Ordinances and regulations governing these installations range from no control to moderately good control.

Two communities, Lemont and South Chicago Heights (combined population 4,394), have sewer systems, but do not provide any treatment.

TABLE 40. NORTH SHORE SANITARY DISTRICT TREATMENT WORKS

| TREATMENT WORKS | TYPE OF PLANT | TRIBUTARY POPULATION | SEWAGE FLOW (Gallons per day) | DEGREE OF TREATMENT ^a PERCENT REDUCTION | |
|----------------------------------|---|-------------------------|--|---|--------|
| | | | | Normal | Summer |
| 1. Highland Park— Park Ave. | Imhoff | 6,000 | 700,000 | 35 | 40 |
| 2. Highland Park— Cary Ave. | Imhoff | 4,000 | 600,000 | 35 | 40 |
| 3. Highland Park— Racine Ave. | Imhoff | 1,000 | 200,000 | 35 | 40 |
| 4. Lake Bluff | Imhoff | 1,500 | 250,000 | 35 | 40 |
| 5. Lake Forest | Imhoff | 7,000 | 1,000,000 | 35 | 40 |
| 6. North Chicago | Imhoff | 9,000 | 2,000,000 | 35 | 40 |
| 7. Zion | Imhoff | 4,500 | 450,000 | 35 | 40 |
| 8. Winthrop Harbor | Imhoff | 1,000 | 100,000 | 35 | 40 |
| 9. Waukegan | Imhoff chemical plant | | | | |
| | | 40,000 | 4,000,000 | 40 | 60 |
| 10. Fort Sheridan | Primary sedimen- tation, trickling filter | 22,000 | 800,000 | 88 percent reduc- tion of B.O.D.; chlorination of effluent to 0.1 parts per million residual at all times | |
| | | | | | |
| All works | | 96,000 | 10,100,000 | | |

^a Effluents to Lake Michigan are chlorinated, 0.1 to 0.4 residuals being maintained during the summer bathing season.

Untreated sewage from these two communities is discharged directly to the Sanitary Drainage and Ship Canal and to Third Creek, respectively.

The remaining fourteen municipalities (population 54,501) have sewer systems and various degrees of treatment. The plants in two municipalities provide only primary treatment. One, located at Pala-

tine, is inadequate and poorly maintained and operated, raw sewage being discharged directly to Salt Creek on most occasions. The other plant, located at Olympia Fields, serves approximately half the town's 1940 population and is also poorly operated and maintained.

Nine municipalities provide complete treatment facilities, consisting of Imhoff tanks and trickling filters. In several of these municipalities the plants are poorly operated or are inadequate. The plant at Hazelcrest is out of service as a result of the collapse of certain units. Raw sewage from this plant is discharged to the Calumet Union Drainage Ditch. The plant at Homewood is poorly operated and discharges as unsatisfactory effluent to Butterfield Creek. Excessive infiltration of storm water to the sewers causes the plants at Arlington Heights and Steger to operate under a heavy overload during wet seasons. The Arlington Heights plant is therefore by-passed during these periods, and raw sewage is discharged to the Weller Drainage Ditch. At four of the plants, operation tests to determine character of sewage and efficiency of treatment are performed by the plant operators.

Three municipalities provide complete treatment facilities and use the activated sludge process. All three communities have separate sewer systems. The sewer systems of Chicago Heights and Oak Lawn, however, allow excessive infiltration of ground water. The plant at Chicago Heights is by-passed occasionally, and as a result nuisance conditions are created in Thorn Creek. Barrington uses an old Imhoff tank treatment plant to treat the storm water flow. Necessary operation tests are performed at the plants. At one plant a part-time graduate chemist performs the tests; the plant operators run the tests at the other plants.

RURAL SEWAGE DISPOSAL

The term "rural sewage disposal" as used in this chapter refers to sewage disposal in unincorporated areas around Chicago. Many of these areas are in no sense rural, and differ from the incorporated urban areas only in that they lack a political boundary and corporate responsibility. Most of these communities do not have public water supply and sewer systems and rely on private wells and individual methods of sewage disposal.

The proper disposal of human excreta has an important influence upon the health of individuals in rural and urban areas where public

sewers are not available. Diseases such as typhoid fever, dysentery, and enteritis are transmitted from one person to another through the fecal contamination of food and water, largely because of improper disposal of human wastes. The safe disposal of all human and domestic wastes is necessary to protect family and community health and to prevent the occurrence of nuisances.

To accomplish satisfactory results, human and domestic wastes must be disposed of so that they will not: (1) contaminate any drinking water supply; (2) give rise to a public health hazard by being accessible to insects, rodents, or other possible carriers which may come in contact with food and drinking water; (3) create a nuisance through odor or unsightly appearance; (4) pollute or contaminate the waters of any bathing beach or stream used for public bathing purposes, or for recreational purposes; (5) violate laws or regulations governing water pollution or sewage disposal.

The disposal of human wastes in rural areas may be considered as of two types. The nonwater-carriage type includes installations such as earth-pit privy, masonry-vault privy, chemical toilet, pail-type privy, and incinerator privy. The water-carriage type includes septic tanks with or without subsurface disposal field or seepage pits and cesspools.

SANITARY CONTROL Outside the area of the Sanitary District of Chicago regulations of the Illinois Sanitary Water Board govern the facilities for the treatment and disposal of human waste when such facilities serve more than fifteen people. The Sanitary District is granted similar powers in its area. Plans and specifications for waste disposal facilities outside the Sanitary District must be submitted to the State Sanitary Water Board for review and appropriate action before construction is begun.

Rules and regulations recommended by the Illinois Department of Public Health on September 18, 1942, provide for the sanitary control of sewerage facilities. Every building where persons congregate, or are employed, which is accessible to a public sanitary sewer, must be connected to this sewer by the owner or the agent of the premises in the most direct manner possible. Each building must have a separate connection.

In areas where public sanitary sewers are not available or cannot be made readily available, approved facilities for the treatment and disposal of all human wastes must be provided. Rules and regulations suggested by the Illinois Department of Public Health also govern

the location, erection, construction, enlargement, alteration, or repair of facilities for the treatment and disposal of human wastes, which serve less than fifteen persons.²

Further control over individual sewage treatment and disposal is exercised by the Cook County Zoning Bureau, a bureau of the Cook County Highway Department, and indirectly by the Federal Housing Administration. The authority of the zoning bureau is derived from the zoning ordinances of Cook County, adopted in August, 1940, and amended in March, 1944, which state that "every residence, business, trade, or industry hereafter established and requiring water supply or sewage disposal facilities shall provide such facilities conforming to standards of design and location approved by the State Department of Public Health, and any new water supply and sewage disposal facilities hereafter provided for existing uses shall conform to such standards." The Federal Housing Authority will not approve a loan unless the location and design of sewage-disposal facilities meet the requirements of the Cook County and Illinois departments of public health.

The Cook County Department of Public Health has issued a bulletin entitled *Wells, Septic Tanks, Seepage Systems*, which sets forth the standards of design and location of these facilities and is based on the requirements of the Illinois Department of Public Health and the Federal Housing Administration. The Cook County Zoning Bureau uses these standards in evaluating zoning applications and does not employ sanitary engineers since it is interested primarily in zoning. Logically, this service should be assumed by the Cook County Department of Public Health, but adequate performance of the work would require additional personnel. Engineers from the Cook County Department of Public Health at present review all Federal Housing Administration applications for approval which involve water, sewerage, or both. Where technical problems are involved the engineers also inspect and review installations and plans for existing and planned sewage treatment and disposal facilities. Existing statutes vest the Illinois Department of Public Health with primary authority for sanitary control over sewage disposal conditions in unsewered areas which become a nuisance and public health menace and are not rectified by local health authorities.

² The following bulletins of the Illinois Department of Public Health present an interpretation of these rules and regulations: *Water Supply and Sewage Disposal Facilities for Single-Family Dwellings* (1942 ed. of Bulletin No. 67) and *The Sanitary Pit Privy* (Bulletin No. 137).

TYPES OF RURAL SEWAGE TREATMENT AND DISPOSAL

Private homes.—The 1940 United States Census of Housing listed 15,165 rural nonfarm dwelling units in Cook County with flush toilets, 5,784 with outside toilets or privies, and 278 with no toilet or privy. Flush toilets were listed for 1,491 rural farm dwelling units, outside toilets or privies for 2,216, and no toilet or privy for 39. The Cook County Zoning Bureau estimates that since 1940 an additional 7,000 permits have been issued for individual septic tank installations.

The installations in common use are mainly earth-pit privies and septic tanks. Concrete vault-pit privies, chemical toilets, septic toilets, and cess-pools are in limited use. The earth-pit privies are, in general, poorly maintained and afford access to insects, animals, and surface water. The use of earth-pit privies is not approved by the Cook County Zoning Bureau in areas where the limestone is within 30 feet of the ground surface. Water-tight vault privies are allowable in those instances where water-carriage methods are not feasible. Ordinarily, cesspools are prohibited, and may be used only by special permission from the Illinois Department of Public Health.

Septic tanks are in general use throughout the rural area. In many instances the septic tanks are improperly designed and poorly maintained and give rise to nuisance conditions. Many septic tanks are not provided with subsurface disposal fields and their effluents discharge to roadside ditches, creeks, or other watercourses.

Tourist and trailer camps.—Inspection records of 61 tourist and trailer camps show that: (1) 33 camps have septic tank installations, 17 of which discharge the septic tank effluent to creeks or other watercourses; (2) 13 dispose of their sewage to public sewer systems; (3) 11 have earth-pit privies; (4) 3 use cesspools; (5) 1 has a septic tank and sand filter.

Rural schools.—A review of the sanitary inspection records of 84 rural schools in the county revealed that the majority of them treat the sewage in septic tanks. However, 24 of the 50 using septic tanks discharge the effluent to roadside ditches, creeks, or other watercourses. Nine schools are connected to public sewer systems and 18 schools use earth-pit privies. Three schools use septic toilets or chemical toilets. Four schools are provided with sand filters for final treatment of the septic or Imhoff tank effluent.

Country clubs.—A review of the sanitary inspection records of 46 country clubs revealed that 30 treat their sewage in septic tanks,

but only 2 in this group provide subsurface disposal fields. The remaining 28 clubs discharge the septic tank effluent to ditches, creeks, or other watercourses. Sixteen clubs are connected to public sewer systems.

Recreational areas.—The Forest Preserve District of Cook County provides a wide range of recreational facilities to an estimated half-million people per season. Sewage disposal facilities available to the public are mainly earth-pit privies. Although large numbers of people use these facilities, the necessary maintenance work is not provided to keep these facilities in a sanitary condition. Some of the larger picnic areas are provided with concrete vault privies and several of the district headquarter's offices have septic tanks with subsurface disposal fields.

Others.—Many institutions, industries, and other groups in the unincorporated areas of Cook County dispose of their sewage, mainly by water-carriage methods, to various watercourses. Disposal methods range from direct discharge to the watercourse to complete treatment before discharge by trickling or sand filters. In the survey conducted during the summer of 1946 by the State Sanitary Water Board, in co-operation with the Cook County Department of Public Health, the Sanitary District of Chicago, and the Forest Preserve District of Cook County, many sewer outlets from storm sewers, sanitary sewers, and drain tiles from industries, institutions, schools, and homes were found discharging sewage into the watercourses. The condition of the watercourses running through Cook County is described in Chapter 8.

SEWER SYSTEMS FOR UNINCORPORATED AREAS OF COOK COUNTY
The methods of sewage disposal used in these communities as they develop are comparable in some respects to those which existed twenty-five to thirty years ago in many communities which have since become incorporated municipalities. Built-up communities composed of a fairly large number of individual dwellings, each provided with individual well-water supplies and sewage disposal facilities, are common in the unincorporated areas of Cook County. Sewage disposal is taken care of generally by a septic tank and subsurface tile disposal field which provides for the seepage of the sewage into the ground. These very conditions are among those which prewar public works and postwar planning programs were and are attempting to rectify in order to provide more wholesome sanitary conditions in built-up areas. Solution of the difficult problems presented in these

areas is primarily the responsibility of the local communities concerned. Adequate control over sewage facilities is needed in the development of the subdivided so-called "rural areas" to prevent the creation of blighted areas in the unincorporated territory that rings Chicago.

Four methods for providing the mechanism through which a sewer system can be built are available to the residents of these unincorporated communities. These methods are: (1) formation of a specific sanitary district for the purpose of building a local sewer; (2) action by township authorities to purchase, construct, operate, and maintain sewage systems; (3) incorporation as a separate municipality; (4) annexation to an adjoining municipality.

The establishment of a local sanitary district authority for the purpose of constructing sewer systems in a built-up unincorporated area in an established method of providing sewer systems for such areas. This agency could formulate a comprehensive plan for the area, and, as need developed, provide the means by which the residents of the district could construct, operate, and maintain their own system.

It seems probable that any attempt to use the powers of the township government in the solution of this problem would in most instances be impracticable, because it would lead to the establishment of multifold, isolated, costly, and inefficient services. In view of the consistent trend away from the use of the township as a functional unit of government, especially in Cook County, exercise of township authority for this purpose seems particularly inappropriate.

Incorporation as separate villages or annexation to adjoining villages are both suitable methods of organization to accomplish the purpose desired. The second method, however, is preferable whenever feasible. Most of the existing municipalities have passed through the "growing pain" stage which follows incorporation. Expansion of their municipal functions to serve new adjacent areas should be achieved easily with a minimum of confusion.

SUMMARY AND COMMENTS

MUNICIPAL SEWERAGE AND SEWAGE TREATMENT WORKS. Nineteen municipalities in Cook County have no sanitary sewer systems. Disposal of domestic sewage in those municipalities is by means of privies, septic tanks, and other methods of individual disposal, which often create health hazards and nuisances in thickly settled areas.

Adequate ordinances covering the supervision of construction and maintenance of these individual facilities is usually lacking in many cases; ordinances which do exist are not enforced properly. Several municipalities which prohibit discharge of sanitary wastes and septic tank effluents to the storm sewers do not enforce these regulations. As a result, discharge of sewage to watercourses continues.

Forty-six of the seventy municipalities with sewer systems are provided with combined sewers, which overflow during storm periods and pollute the watercourses. Sewer systems, whether combined or sanitary, may allow excessive ground-water infiltration which overloads the sewer system and places an unnecessary burden upon the treatment works. When the amount of incoming sanitary sewage and storm flow exceeds the capacity of the plant, the excess passes to the watercourse, and the considerable wastes thus discharged for short periods cause pollution.

Sanitary District plants treat the sewage of forty-seven of the sixty-two municipalities within the Sanitary District of Chicago (Chicago excluded). Complete treatment is given at all plants except the West Side Plant. This plant provides only primary treatment. The partially treated sewage from the West Side Plant will, however, be given final and complete treatment at the Southwest Plant when the latter is completed. At present the sewage from nine municipalities within the Sanitary District is not treated. Since most of the municipalities within the Sanitary District have combined sewer systems, overflows are provided to prevent overloading the Sanitary District interceptors. Some pollution of the watercourses is caused by overflow from the diversion chambers during storm periods and by sewage from municipalities not connected to the Sanitary District interceptors.

Of fourteen communities outside the Sanitary District, eleven operate plants which provide complete treatment by the trickling filter or activated sludge processes. In two communities the plant units have collapsed and are not operated. One operates a plant which provides primary treatment only. Operation of the smaller plants is assigned usually to a municipal employee who devotes only a portion of his time to this work. Full-time employees are employed by the larger plants. One plant also employs a part-time graduate chemist to perform laboratory tests.

RURAL SEWAGE DISPOSAL. There are no public sewer systems in the unincorporated areas, with the exception of the area known as

Norwood Park Sanitary District. The general method of sewage disposal is by means of earth-pit privies and septic tanks. Most earth-pit privies at private and public installations are maintained improperly and may be a source of nuisance and a health hazard. Septic tank effluents are discharged to subsurface disposal systems or to roadside ditches, creeks, or other watercourses. Subsurface disposal systems are satisfactory only if they are properly designed, located, and operated. Disposal to roadside ditches, creeks, or other watercourses may create obnoxious and "nuisance" conditions and health hazards.

The development of individual sewage disposal facilities in relatively thickly settled areas is undesirable. Two steps are needed to control such development: (1) the adoption by the Board of Commissioners of Cook County of reasonable rules and regulations for the provision of community sewer systems and sewage treatment works, by new subdivisions or by connection to some existing sewage treatment works; (2) the adoption by the existing unincorporated areas of one of the methods of organization recommended by the state legislature for the construction of sewerage.

The sanitary control over rural sewage-disposal systems is divided between various agencies. The State Sanitary Water Board is responsible for the control of pollution from installations having more than fifteen people, except in the area within the boundary of the Sanitary District of Chicago, where that agency has the authority. The Cook County Department of Public Health and the Cook County Zoning Bureau, a part of the Cook County Highway Department, at present divide responsibility for the control of individual sewage-disposal facilities.

RECOMMENDATIONS

It is recommended that:

1. Municipalities shall adopt ordinances and administrative regulations in accordance with the jurisdiction of the Illinois Sanitary Water Board to control the construction and maintenance of individual disposal systems where no public sewers are accessible.

2. Municipalities shall install sanitary sewer systems and sewage-treatment plants where such facilities do not now exist.

3. Municipalities, when constructing new sewer systems or major extensions of existing systems, shall construct such systems on the separate basis with separate systems for sewage and storm flow and in such manner as to reduce infiltration to a minimum.

4. Steps shall be taken to reconstruct existing sanitary sewer systems which now permit excessive ground-water infiltration.

5. Wherever indicated, unincorporated communities shall organize under the most suitable of the four methods provided by law, and construct and operate sewer systems in their respective areas.

6. The functions relating to water and sewerage systems now enforced by the Cook County Zoning Bureau shall be transferred to the Cook County Department of Public Health.

7. The Board of Commissioners of Cook County shall adopt rules and regulations for the control of sewerage in subdivisions.

8. The Cook County Department of Public Health shall enlarge its engineering staff in accordance with the recommendations made in Chapter 42, in order to provide adequate supervision and control over sewerage in the area under its jurisdiction.

PRESENT STATUS OF WATER POLLUTION IN THE CHICAGO-COOK COUNTY AREA

by *Ralph E. Tarbett*

REDUCTION OF WATER POLLUTION has been an ever-present problem in the Chicago-Cook County area. The situation in regard to Lake Michigan and the following rivers and drainage systems is described in this chapter: the Chicago River, the Des Plaines River, the Calumet River System, and the Main Drainage Channel.

LAKE MICHIGAN

Although Lake Michigan no longer receives the sewage of Chicago and Cook County, a considerable amount of polluting material still finds its way there. Entry of some of this pollution could be stopped.

The most critical area of pollution is the southern end of the lake, where considerable amounts of sewage and industrial wastes enter, chiefly from the highly industrialized area of Lake County, Indiana. This pollution has been a constant threat to the safety of the water supply taken in through the Sixty-eighth Street and the E. F. Dunne water intake cribs opposite Sixty-eighth Street, and supplied to the southern section of Chicago and to many suburban areas. The industrial wastes which form part of the pollution contain certain compounds that impart disagreeable tastes and odors to the water, a condition too well known to need comment in this report. With the completion of the South District Filtration Plant the difficulty of producing a clear, palatable water from this southern portion of the lake should be overcome.

Pollution enters the southern portion of the lake from the Lake County area through the Indiana Harbor Ship Canal. Dry-weather flows of polluted water at rates up to 500 cubic feet per second and raw sewage during storm periods are discharged into the lake through this canal from Whiting, Hammond, Gary, and East Chicago. This section of the lake has received more study than perhaps

any other body of water because of the effect that its pollution has upon a part of the Chicago water supply. The U. S. Public Health Service made an exhaustive study in 1924-25, and both the Sanitary District of Chicago and the Chicago Water Department have carried on almost continuous studies for many years. The Department of Public Works and the Sanitary District have been active in an effort to bring about abatement of this pollution from Lake County, but with only partial success. The state health authorities of Indiana have been cognizant of the problem, but have apparently lacked authority to act. The Federal Government also lacks authority in such cases.

In October, 1943, the state of Illinois filed suit in the Supreme Court of the United States against the northern Indiana cities of Hammond, Gary, East Chicago, and Whiting, and against some individual industrial concerns, in an effort to eliminate the disposal of sewage and trade wastes into Lake Michigan.

Although the suit has not come to trial, improvement and plans for improvement in the area are forthcoming. In the Fisher report of 1942¹ the towns of Whiting, East Gary, East Chicago, Calumet City, and Calumet Park are listed as communities with no sewage treatment. At the time of the Chicago-Cook County Health Survey in June 1946, sewage treatment plants were in operation at Hammond, Gary, and East Chicago although these plants did not handle all the wastes. The city of Whiting connected about two-thirds of its sewer system to Hammond through the Atchesson Sewer. Carnegie Steel Corporation now discharges its sanitary sewage to Gary sewers. All the domestic sewage of East Chicago goes to the treatment plant, but some industrial plants along the canal discharge their wastes to the canal.

Much improvement in the abatement of pollution is still necessary, however, in the Indiana-Calumet industrial region. In 1944 the Sanitary District of Chicago, the Bureau of Sewers, and the Water Purification Division of the city of Chicago made a joint survey of sewer outlets in the Calumet region, which covered the Grand Calumet River, Indiana Harbor Ship Canal, and Lake Michigan. The survey revealed the entry of domestic sewage from over thirty sewer outlets and of industrial waste from more than seventy outlets.

¹ L. M. Fisher (Senior Sanitary Engineer, U. S. Public Health Service), "Report on Pollution of Lake Michigan in the Vicinity of Chicago's Southerly Water Intakes," January, 1942 (unpublished).

It was pointed out in the preceding chapter that the Calumet River reverses its flow and enters the lake at periods of heavy run-off on its drainage area. Certain plans for improvement of navigation facilities in the Calumet area, promulgated by United States government engineers would, if carried out, prevent any possibility of reversal of flows in the future.

The communities along Lake Michigan north of the Sanitary District of Chicago and south of the Wisconsin state line are included in the North Shore Sanitary District and sewage from these communities is treated before it is discharged into the lake. A list of the treatment works, type of plant, tributary population, sewage flow, and degree of treatment are given in Table 40.

Bacterial results of the examination of water from the Wilson Avenue Crib of the Chicago water supply indicate at times rather high bacterial contamination. To what extent this pollution is due to water movement south along the lake shore has not been studied, so far as can be learned. A review of the results of laboratory examinations made of the lake water at the intake of the Evanston water supply indicates that periods of polluted water (coliform organisms in excess of 2,400 per 100 milliliters) occur several times a year. No results of examinations of the raw lake water at the Wilmette, Kenilworth, and Winnetka water works were available.

During periods of heavy rain the relief sewers at Evanston will discharge diluted sewage to the lake. Whether or not the discharge at these times has any effect on the bacterial quality of the raw water at the Wilson Avenue Crib is not known. This pollution of the lake north of the city should be studied by the city of Chicago and the Sanitary District of Chicago.

During the summer months the use of the lake shore results in a considerable introduction of pollution from bathers as well as surface drainage from adjacent areas. Examination of the water of the bathing beaches indicates that the coliform organisms are generally found to be 240 to 2,400 per 100 milliliters. To what extent this pollution moves out to the water-supply crib is not known.

Additional pollution enters the lake from the large number of pleasure boats and lake vessels plying the waters, particularly in the summer months.

The pollution in total is relatively small and will produce no bad effect on the water at the Chicago intakes if the water is given proper treatment before delivery to the water-supply system.

CHICAGO AND DES PLAINES RIVERS

Control over the pollution of two streams in the Cook County area is of importance to the citizens of the area: the Des Plaines, because of its recreational value, and the Chicago, because it flows through the city and at times becomes a decided nuisance in appearance and odor.

The major portion of the pollution of these two streams originates in Cook County and within the area controlled by the Sanitary District. Until July, 1946, however, the District had no power to exercise control over the pollution of streams within its area. Under an act of the state legislature in 1945 this control was added to the District's powers and under this enabling act the District board of trustees adopted a pollution-control ordinance on July 11, 1946. This ordinance enables the District to bring pressure to bear upon municipalities to enforce removal of pollution from the streams and to take action against industrial establishments and individuals discharging industrial wastes or sewage.

THE DES PLAINES RIVER The Des Plaines River flows through approximately 6,000 acres of Cook County Forest Preserves that are used for recreational purposes. The polluted condition of the stream has, however, curtailed its recreational use greatly. Two major sources of pollution during dry-weather flow are as follows: (1) Wheeling, Ill., with a population of 550 (1940 census), discharges raw sewage and septic-tank effluent into the stream just south of the Lake-Cook County boundary; (2) Mount Prospect, Ill., with a population of 1,720 (1940 census), discharges septic-tank effluent into the Weller Drainage Ditch, which flows into the Des Plaines River north of the Northwest Highway.

Storm overflows from the combined sewers of a number of cities and flow from leaking diversion chambers both create local deposits in the vicinity of sewer outlets during the summer when the flow of the stream may reach a minimum of fifteen cubic feet per second, these conditions also curtail the recreational use of the stream. During the war, there was complaint that the airplane engine works at North Avenue discharged oil wastes into the stream. While recent observation showed some oil slick still present, a far greater cause for complaint is the rather considerable accumulation of rubbish and junk in the stream in this vicinity. The Forest Preserve District permits boating, but prohibits swimming and wading in the river.

Salt Creek, one of the main tributaries to the Des Plaines River, originates in northwest Cook County, flows through most of its length in Du Page County, and empties into the Des Plaines River at the town of Lyons in Cook County. Most of the pollution enters the stream in Du Page County. The main source of pollution to Salt Creek in the northern part of the county is the village of Palatin with a 1940 census of 2,250. Although this village has a small treatment plant, the plant is obsolete and has had no maintenance for years. As a result, the effluent is slightly septic raw sewage.

Flag Creek, which carries much pollution, is an important tributary to the Des Plaines River. This stream originates north of Western Springs and flows south to the Des Plaines River at the Cook-Du Page County boundary line. This creek receives raw sewage and septic-tank effluent from five golf courses, serving 1,000 people, four taverns, serving 300 to 500 persons daily, and several institutions. The Sanitary District of Chicago's Western Springs pumping station and the Hinsdale Sewage-Treatment Plant also discharge effluent into this stream.

It would appear advisable for communities in Cook County along the Des Plaines River, with combined sewers, to adopt the policy of constructing sanitary sewers whenever extensions to their systems are required, and for new systems to be constructed under the separate system plan, the sanitary sewers discharging to the Sanitary District interceptors where possible. In this way the necessity of discharging weak domestic sewage to the stream during heavy rains would be reduced, if not eliminated.

Industries with industrial wastes should be permitted to locate in this drainage area only if steps are taken to dispose of their wastes properly in a manner approved by the Sanitary District or by the Illinois Sanitary Water Board.

THE CHICAGO RIVER Of most interest to the citizens of Chicago is the Chicago River and its tributaries within the city proper. While the major part of the sewage of the city has been removed from the river, it is, nevertheless, during the summer months unsightly and at times obnoxious. Two questions are frequently asked: Has all the pollution that can be removed been removed? After the removal of the remaining pollution, what will be the condition of the stream? The answer to the first question is "No." The second question cannot be answered so simply, since, as the following discussion indicates, so much removable pollution now exists. While the stream will

always be rather badly polluted and may at times be unsightly because of floating material, it is believed that the river may be maintained in such condition that natural oxidation processes may take place without the formation of noxious gases.

A stream such as the Chicago River which flows through a built-up section of a city necessarily receives a certain amount of street run-off which contains organic matter. Ground water polluted by leakage from the sewers also will reach the stream. Even if no polluting material except from these two sources entered the stream, a very definite degree of pollution would be present. In the case of the Chicago River certain other sources of pollution, such as domestic sewage and industrial waste, which enter the stream in violation of existing regulations, could be eliminated if control authorities took proper action. Other sources of pollution can be reduced, even though complete elimination may be impossible. Existing pollution that must be carried by the stream is the constant discharge of the effluent of the North Side Sewage-Treatment Plant into the North Shore Channel. This sewage treatment plant operates at a high degree of efficiency, removing 93 percent of the organic matter originally in the sewage. The effluent is clear and contains usually about eight parts per million of dissolved oxygen. The organic material remaining in solution in the effluent, which must receive complete oxidation in the stream, is, however, equivalent to the organic matter in the raw sewage of 71,000 persons.

In the North Branch of the Chicago River the effluent of six sewage-treatment works is discharged. North of the Sanitary District boundary the North Branch receives the plant effluents of the West Plant of the U. S. Great Lakes Naval Training Station, Highland, Highland Park, and Deerfield, having an estimated total population equivalent of 3,100. At Northbrook a small plant operated by the Sanitary District discharges an effluent equivalent to that derived from a population of 500 and another at Glenview, with an effluent equivalent to that of a population of 400. It has been reported that during the war the stream below the U. S. Great Lakes Naval Training Station was heavily polluted because of excess loads on the West Plant which caused nuisances as far south as the Cook County line. Sewage effluents with an organic matter equivalent to the sewage of 75,000 persons are, therefore, discharged to the North Branch.

Other legitimate discharges of polluting material are intermittent in character and come from the numerous relief sewers, which should

be operative only after heavy rains to the extent needed to take care of the flow in excess of the carrying capacities of the interceptors. This discharge contains some sewage material in addition to surface water, as well as light floating material that may be unsightly. During these periods, however, the increased flow in the stream should carry such material rather rapidly to the main drainage channel. These relief outlets operate automatically, but material may lodge in the gate seats at times in such a way as to permit constant discharge of whole or part of the dry-weather flow from the city sewers tributary to the relief chamber. This condition is occurring too frequently and indicates lack of proper supervision and maintenance. It can be remedied.

One other source of pollution, which is rather small in amount and difficult, if not impossible, to control, is the sewage from the ships using the stream and from the various towers operated by bridge tenders. The total amount of this sewage is small and should be considered as legitimate sources of pollution. All other organic polluting material entering the Chicago River through sewers can be removed. It is evident that this material is sufficient to deplete all the available oxygen in the stream at certain areas during the summer months and to produce the obnoxious conditions which now exist. At present, the authorities concerned have fairly complete records of the sources of polluting material entering the Chicago River system above the main drainage canal at Damen Avenue. The Sanitary District has records of industries discharging wastes directly to the river system and estimates that this discharge is equivalent to the raw sewage of 360,000 persons. In July, 1944, a subcommittee of the Chicago City Council conducted a river pollution survey and disclosed numerous sources of pollution in addition to those listed by the Sanitary District. A spot check by the Chicago-Cook County Health Survey staff in July, 1946, showed agreement with the findings of the previous survey and noted still additional sources of pollution. It is now estimated that the pollution possible of abatement is equivalent to the sewage of at least 500,000 persons. River samples collected by the Sanitary District at Damen Avenue, which is a considerable distance below many sources of waste discharge, indicate a substantial reduction in the pollution load as a result of purification which takes place in the stream between the sewer outlet and the sampling point. The removal of this pollution is essential to the elimination of nuisance conditions produced during the summer

months by the emanation of disagreeable odors and unsightly boils of sludge. The South Fork of the South Branch of the Chicago River is at present a veritable septic tank from above Thirty-ninth Street to its junction with the South Branch. The Sanitary District's report on the condition of this stream is as follows:

The South Fork of the South Branch is still in poor condition, even though most of the wastes from Packingtown and the Stock Yards have been diverted to the Southwest Works.

Just south of Archer Avenue, at 31st and Benson Streets, the Armour Glue Works continue to pollute the river with around 16 tons of more or less putrescible solids with a population equivalent of over 300,000.

These works have manufactured glue and soap for over 36 years at this location. In recent years the manufacture of certain organic preparations (from fats and oils) used in the paint industry has greatly increased the amount of organic discharge.

The West Arm of the South Fork is still open south of Pershing Road. This receives the discharge of a 12-inch sewer, which carries over-flow for certain sewers in Packingtown used by Armour, Swift, and Libby, McNeill and Libby, and discharges about 0.8 c.f.s., measured in 1914. This sewer often runs full, and may be discharging upwards of 2 c.f.s.

The West Arm also receives storm overflow from the municipal sewer on Ashland Avenue at Pershing Road, and on occasion overflow from the Western Avenue sewer, caused by closing the control at 38th Street and Western Avenue, thereby diverting the flow to the Main Channel direct and to the West Arm at Pershing Road.

The Racine Avenue Pumping Station of the Sanitary District discharges storm flow into the South Fork at its junction with the West Arm. Such discharges tend to deposit sediment containing organic matter, which, in turn, putrefy in dry weather. There is no way of flushing the South Fork with water from Lake Michigan at present, as the 20-foot tunnel along Pershing Road from the Lake Front is now operated as part of the Lake Front Interceptor. A study is being made to determine whether fresh water can be introduced from the South Branch. Until the pollution from the Armour Glue Works is removed, it is questionable whether much benefit would result.

The West Arm has been filled as far as Ashland Avenue. As the section from Ashland Avenue to Pershing Road is not classed as navigable, further efforts should be made to fill this section, which is particularly obnoxious in the summer months. This section receives no flushing at any time.

At times of heavy rain the South Fork will receive some flushing from the discharge at the Racine Pumping Station, but this action will remedy the condition slightly for a brief period only. The state-

ment is made that little can be done toward alleviating the existing condition until the pollution from the Armour Glue and Soap Works is removed. Why this company is allowed to discharge wastes equal to the sewage of more than 300,000 people in violation of the city requirements seems a question worth raising.

Even with the elimination of the pollution now entering the South Fork, it is doubtful whether sufficiently satisfactory conditions would prevail during the summer months to obviate other methods of keeping this section in reasonably nonoffensive condition. To attempt to obtain flushing water from the lake not only is prohibitive from the cost standpoint but also would interfere with the present operation of the diversion program.

The possibility of reducing pollution by filling the cross section of this stream to a central channel capable of carrying 6,000 or 7,000 cubic feet per second, the estimated possible storm flow from relief sewers, should be investigated and studied. If this suggestion is found to be feasible, permission should be obtained from the Congress of the United States, since the stream is now listed as navigable. A permit from the State Division of Waterways would also be necessary. Under proper planning, municipal wastes might well be used for a part of the fill.

The 1944 river survey recorded a number of overhanging privies discharging to the slips along the river. These should be removed. Improvement of the general appearance of many sections of the North and South branches of the river, by removal of wrecked boats and repair or replacement of bulkheads, also would be desirable, even though these conditions do not cause pollution.

CALUMET RIVER SYSTEM

South of the city in Cook County and within the Sanitary District area are several sections not yet tributary to the District sewage-treatment plants. They are within the drainage area of the Grand and the Little Calumet rivers, both of which carry fairly heavy loads of pollution when they enter Illinois from Indiana. The following information from the Sanitary District of Chicago, the Cook County Department of Public Health, and the Illinois Department of Public Health summarizes the conditions of these streams.

CALUMET RIVER The condition of the Calumet River from its mouth to its junction with the Little Calumet and Grand Calumet rivers is generally good. There is, however, discoloration from flue

dust, carrying fine particles of iron ore from the steel mills. This discoloration has no sanitary significance.

GRAND CALUMET RIVER The Grand Calumet River in Illinois is a more or less stagnant waterway, shoaled by deposits from Indiana. A low flow (around 60 to 90 cubic feet per second) passes into the Grand Calumet River from Indiana and contains effluents from the sewage works at East Chicago, Gary, and Hammond and certain industrial wastes. The effect of the current litigation (*Illinois vs. Indiana et al.*) will be eventually to clean up the Grand Calumet River in Indiana and, in due course, in Illinois. Practically all the pollution in the river in Illinois now comes from Indiana.

LITTLE CALUMET RIVER The Little Calumet River flows into Illinois from Indiana. This river has some pollution from the Indiana border to South Holland and its condition is still about as described in the 1933 report of the State Sanitary Water Board. The main sources of pollution are:

The Village of Lansing (4,462 population, 1940 census).—An 18 inch outlet and an 8 inch by-pass gate. The slaughtering waste from the Nagle Packing Company enters the by-pass above the gate. The by-pass gate, because of poor maintenance, was wedged open at the time of observation and hence must be considered a potential source of pollution.

The Globe Rendering Company.—No treatment to water before it enters the stream. The effluent was very bloody and foul.

Thorn Creek and its tributaries.—Butterfield Creek, Deer Creek, Third Creek.

Calumet Union Drainage Ditch.—When this pollution enters the Sanitary District area, it is augmented by municipal sewage and by discharge from a large laundry in South Holland. Local conditions in this area are particularly bad during low dry-weather flow. The Sanitary District has been considering plans for the extension of its interceptor sewer system to pick up the South Holland pollution and also a small flow from Dolton.

THORN CREEK AND ITS TRIBUTARIES Thorn Creek enters Cook County at Western Avenue and Steger Roads, flows through South Chicago Heights, Chicago Heights, Glenwood, Thornton and into the Little Calumet River one-half mile north of 167th Street. This stream is in fair shape, however, with only a moderate amount of pollution entering at widely separated points. These sources are:

Chicago Heights (22,475 population, 1940 census).—This fifteen-inch sanitary sewer by-pass discharges raw sewage during heavy flow.

South Chicago Heights and three large manufacturing concerns.—These send raw sewage and industrial wastes through 15' x 10' concrete outlet near Joe Orr Road.

Darling Stock Farm.—A farm which discharges pen washings from 4,000 head of stock through 12" outlet about one mile north of Joe Orr Road.

Fredericks Brewing Company.—This company discharges cooperative washings and spent yeast through several outlets one-half mile south of 167th Street.

The tributaries to Thorn Creek and a short statement about their courses are as follows:

Butterfield Creek.—Most of the small polluters in Matteson ceased discharging to the stream after the erection of a municipal sewage-treatment plant. The large sources of pollution along this water course are: The Homewood Treatment Plant (4,078 population, 1940 census) plant inefficiently operated and effluent bad; Idlewild Country Club (200 population) raw sewage; Flossmoor storm sewer—dilute sewage, and the Olympia Country Club—raw sewage from club house.

Deer Creek.—This stream flows through rural southeastern Cook County and has no large sources of pollution by sewage. During the 1946 survey, however, approximately twenty-one outlets, serving 400 people, were found discharging into this stream.

Third Creek.—Actually a tributary to Deer Creek and one of the more heavily polluted of the smaller streams in southern Cook County. In the stretch of stream from South Chicago Heights to the point of entrance to Deer Creek at Cottage Grove and Dyer roads, a distance of five miles, are nine large industrial plants and numerous private homes which discharge raw sewage and industrial wastes.

CALUMET UNION DRAINAGE DITCH This tributary to the Little Calumet River was for the most part sewered, and consequently it was impossible to determine the condition of the flow at various points and also the points of entrance of pollution. However, at the time of the 1933 survey several large industries, including the Washington Park Race Track and the Illinois Central Freight Yards, discharged into the ditch. In all probability, from the condition of the

mouth of the ditch, discharge by these industries and by numerous private residences still continues.

SOUTH TINLEY CREEK BRANCH South Tinley Creek Branch originates south of Tinley Park, flows northwest, and enters the Little Calumet River at 135th Street. This branch was observed only as far as the Oak Forest Infirmary, and in this stretch it flowed through no industrial districts. The principal polluters to this branch were a small dairy, several roadhouses, serving about five hundred people, and approximately sixty homes.

CALUMET-SAG CHANNEL The condition of the Calumet-Sag Channel is uniformly good, despite the raw sewage discharged into it from Midlothian, Posen, parts of Blue Island, Chicago, and Evergreen Park, as well as the flow from the Little Calumet River. The Sanitary District is working on plans to complete intercepting sewers in the vicinity of Blue Island.

However, such raw sewage is discharged downstream of the control gates on the channel near Ashland Avenue, and always moves toward Lockport. There has never been any discharge through the lock gates toward Lake Michigan.

The Calumet Sewage-Treatment Works is located in this area and treats the major portion of the sewage of the area within Illinois. Some nine villages, or parts of villages are still discharging raw sewage to the streams in this same area. Several of those streams and their main sources of pollution are as follows:

North Tinley Creek Branch.—It originates south of 159th Street and flows through Mascoutin Woods Forest Preserve and enters the Channel at 127th Street. This area is lightly populated, but the stream receives sewage from a large country club, two out-door camps, several homes, and a small mushroom factory.

Mill Creek.—This stream enters the channel between Ninety-sixth and Kean Avenues and receives little sewage other than that from Orland Park (631 people, 1940 census).

An unnamed stream.—This enters the channel at Ridgeland Avenue and receives sewage from a large restaurant, Navajo Fields Country Club, and the Oak Hills' Country Club.

MAIN DRAINAGE CHANNEL

Along the Sanitary and Ship Canal (Main Drainage Channel), about five miles below the Southwest Works, the Sanitary District is using

sludge lagoons as a temporary expedient to handle excess sludge until the expansion of the West-Southwest Works has been completed. It is reported that these sludge lagoons will be operated for the next five years at least. The supernatant liquid from the lagoons is discharged into the main channel.

The Corn Products Refining Company at Argo discharges wastes with an average population equivalent of 125,400 (1945) into the main channel. Daily composite samples of wastes from this plant are analyzed at the main laboratory of the Sanitary District, and from these results population equivalents are determined. The sewage of Summit and Lemont, with a combined population of 9,600, is discharged without treatment directly into the main channel.

The Bedford Park Clearing Sewer carries industrial wastes and discharges into the Illinois and Michigan Canal. The old canal has no connection with the Chicago River and is filled from Ashland Ave. in Chicago to the Glenn Yard of the Atchison, Topeka, and Santa Fe Railroad in Stickney. It has no significance as a navigable stream from Lockport to Sag, and above the Calumet-Sag it is a local nuisance which should be eliminated.

While the major portion of the sewage and industrial waste originating in Cook County within the Sanitary District area is now tributary to the sewage treatment plants, further improvement in stream conditions is possible, nevertheless.

RECOMMENDATIONS

It is recommended that the city of Chicago:

1. Shall require all industries and buildings now discharging wastes or sewage into the water courses within the city to cease such practice and to connect with the city sewers in accordance with the law.
2. Shall complete the filling of the bed of the West Arm of the South Fork of the South Branch of the Chicago River above Pershing Road.
3. Shall co-operate with the Sanitary District in giving consideration to the possibility of reducing the cross-sectional area of the South Fork of the South Branch from Pershing Road to its confluence with the South Branch to such area as will permit a water-carrying capacity of 6,000 or 7,000 cubic feet per second. If this action is found to be feasible, then the city shall request the Congress of

the United States to declare the South Fork a nonnavigable stream. If so declared, the city shall obtain a permit from the Illinois Division of Waterways to carry out the work.

4. Shall co-operate with the Sanitary District in making, at least once yearly, a sanitary survey by boat of the Chicago River and its tributaries.

5. Shall remove all overhanging privies along the shores and slips of the Chicago River and its tributaries within the city limits.

6. In co-operation with the Sanitary District of Chicago, shall survey the pollution of Lake Michigan opposite the northern portion of and to the north of the city with relation to pollution reaching the northern city water intake, as a preliminary step toward taking whatever remedial action that may be indicated.

It is recommended that the Sanitary District of Chicago:

1. Shall complete the intercepting sewer construction as planned.

2. Shall maintain more adequate control over storm-relief outlets of the interceptor system.

3. Shall construct connections to the sewers in marginal areas at or near their outlets so that they will discharge dry-weather flow into the interceptors of the Sanitary District.

4. Shall require industrial plants now accessible to the interceptor system to connect thereto.

5. Shall prohibit the discharge of untreated wastes from new industries to any water course in the area under its jurisdiction.

6. Shall require that all municipalities within the area enforce the ordinances which relate to connection with sewers.

It is recommended that the Cook County Department of Public Health and the Illinois Sanitary Water Board:

1. Shall require all sewers or extension of existing sewers within areas under their jurisdiction to be constructed on the separate system plan.

2. Shall require treatment of all sewage or industrial wastes from communities, institutions, and establishments in areas under their control before discharge to a water course.

3. In co-operation with the Sanitary District of Chicago, shall establish a uniform policy for the control of pollution of the water courses in the entire county.

REFUSE COLLECTION IN CHICAGO

by *Gordon E. McCallum*

THE TEMPORARY STORAGE, collection, removal, and ultimate disposal of the waste products of a large municipality constitute a major problem, the proper execution of which requires expert technical planning and direction. Some concept of the magnitude and extent of the problem may be obtained when it is realized that a substantial percentage of the materials received daily in a city by train, truck, and boat must be removed later as solid wastes. Vital as the satisfactory handling of this problem is to the health and comfort of the community, it has not, in general, received the scientific study or the careful technical guidance given to other important municipal sanitation services, such as water supply and sewage disposal. Largely because of a more adequately informed public and consequent public support, water-supply problems have been solved well enough so that safety and continuity of service are taken for granted. Likewise, water-carried waste disposal by a system of sewers functions with such efficiency and dependability that the citizen is hardly cognizant of the service unless it fails. The problems incident to these services were not necessarily solved because they were less difficult, but primarily because they were approached and treated in a scientific manner.

Although not associated as closely with public health as are water supply and sewage disposal, the proper handling of refuse, particularly that portion composed of garbage, is of major public health significance. If not properly stored, handled, and disposed of, garbage provides an excellent opportunity for the breeding of flies and other insects and for the harborage of rats.¹ Discarded receptacles and other rubbish in which water may be retained may serve as breeding places for mosquitoes. Combustible materials permitted to accumulate on premises or in public alleys create a fire hazard and endanger

¹ The importance of the public health role of the rodent has been well established. The findings of the special survey on rodent control are presented in Chapter 18.

life. Feeding of uncooked garbage to hogs yields a high incidence of trichinosis in pork. Thus, it is evident that garbage and refuse may affect the public health in many ways and that the proper handling and disposal of these waste products is essential to the existence of a clean and healthful community.

Too often refuse collection and disposal have been considered a rather low order of public service. As a result, public support and municipal budgets frequently have been inadequate. Under these conditions extreme difficulty has been experienced in obtaining and retaining competent personnel, particularly in supervisory positions, and in procuring and maintaining a sufficient quantity of modern equipment. The invariable result of a neglected municipal refuse department is poor service, which in turn produces carelessness on the part of the individual citizen. Without effective leadership, good service, and civic pride among its citizens, a clean city cannot be maintained.

In some cases the collection and disposal of refuse is handled by private scavengers, who may operate from one to several trucks. If this enterprise is conducted in accordance with suitable ordinances and regulations and is under competent municipal supervision, including police powers, it may be satisfactory. In the absence of well-defined procedures of operation and with little or no public supervision, however, the service is not likely to provide acceptable standards of community sanitation.

Various communities have different plans of organization for carrying on refuse collection and disposal. Each is influenced by a number of factors, some of which are peculiar to a particular community and some of which are rather general and common to all. In the former classification, climate, type of housing, kinds of fuel utilized, types of industry, municipal organization, and standards of service are factors which vary from community to community. Size of municipality and density of population, however, will dictate to a considerable extent the type and degree of service in any community.

The isolated rural household with ample space and no near-by neighbors often disposes of garbage and refuse by feeding to poultry and domestic animals or depositing on the premises. These same methods are utilized also in small villages and in suburban areas with scattered housing. In more densely populated villages and small towns, however, the impracticability of having each household and business establishment handle its refuse problem individually be-

comes apparent. The demand for service in this type of community is usually answered by the private collector, who is under no supervision. In larger municipalities collection may be carried on by private scavengers operating under municipal ordinances and regulations, or it may be undertaken as a public service by the local government. In the large city density of population and increased distance to points of garbage disposal make the problem quite complex, and garbage collection and disposal, whether conducted as a private enterprise or as a municipal function, must in such large places receive the careful attention of the municipal authorities as well as the whole-hearted co-operation of the citizens.

HISTORY OF REFUSE COLLECTION AND DISPOSAL IN CHICAGO

REFUSE COLLECTION The history of refuse collection and disposal in Chicago presents an interesting chapter in the growth of the city as well as in the development of this field of municipal service. The collection service has undergone many changes in both organization and procedures during the last forty years. Throughout the entire period, however, collection of refuse and cleaning of streets have been decentralized on a ward basis and supervised at that level. More effective co-ordination and centralized control were brought about in 1914 by the appointment of an assistant superintendent of streets who was placed in charge of these activities.

This form of organization was continued until 1932, refuse collection and street cleaning being operated as a division of the Bureau of Streets in the Department of Public Works. At that time they were placed under the newly formed Department of Streets and Electricity and three division supervisory offices were established over the wards. Each division office exercised control over a specified number of wards. The number of divisions was increased to five in 1936. Later, as a result of a comprehensive survey by the department, all division offices were abolished and a central administrative office established. The present centralized control organization has been in operation since 1945.

Prior to 1924 the city collected refuse in horse-drawn wagons. A program of replacing these wagons with tractor-trailers was instituted in 1924 and completed by 1928. The trailers are drawn by team while loading in the alleys, but are hauled to the disposal site by tractor. Replacement of this equipment was begun in 1940 by the procurement of modern conveyor trucks. At that time 100 conveyor-

loading type trucks were purchased by the city. During the first year in service they were operated on a three-shifts-per-day basis, and since then on two shifts per day. After a few years of this constant usage, procurement of additional equipment was necessary. After 1943 a variety of types of equipment was bought in order to provide wide experience upon which to draw as a guide in postwar purchases. These most recent purchases are all motorized, and when a load is completed the vehicle transports its contents to the point of disposal without delay.

The equipment and methods employed in the collection service have been recently undergoing as extensive changes as they did in 1924, when the tractor-trailers began replacing horse-drawn wagons. Only thirty-seven of the trailer units of this early period now remain in service. The trailers and open-body dump trucks are being replaced rapidly by modern enclosed refuse-collection trucks equipped with mechanical loading devices.

REFUSE DISPOSAL Paralleling the history of the collection service, refuse disposal has undergone a number of changes in Chicago during the past forty years. During the period 1906 to 1913 garbage and trash were separated, and the garbage was reduced for the recovery of grease in a plant operated by the Chicago Reduction Company. This plant was purchased by the city in 1914, primarily because of nuisance complaints resulting from its operation. The city continued to operate the plant until 1929, when the price of grease and tankage became so low that operation was very uneconomical. As a matter of fact, it is reported that 1918 was the only year in which the reduction plant was operated by the city at a profit. All types of grease were bringing a high price in that war year.

In 1928 six superior incinerator units with a combined capacity of 600 tons were installed on Goose Island at a cost of approximately \$1,000,000. The incineration plant was operated until 1934, when it was abandoned because of high operational and maintenance costs. This plant served only the north side of the city. In 1931 the city failed to pass a proposed bond issue of \$2,620,000 for the construction of five additional incinerators.

The operation of an incinerator necessarily requires the separation of combustible and noncombustible material. Since the closing of the incinerator and disposal of all waste material at dumps, the segregation of refuse collected by the city has not been required. An ordinance relating to garbage collection, passed in December, 1945,

specifically permits the mixing of all types of refuse together in one container, as present methods of disposal do not require separation.

CURRENT ORGANIZATION AND PROGRAM OF REFUSE COLLECTION

ORGANIZATION The Refuse Collection and Street Cleaning Division is under the Bureau of Streets in the Department of Streets and Electricity. This department is in charge of a commissioner who is appointed by the mayor and directly responsible to him.

There are approximately 2,400 employees in the Refuse Collection and Street Cleaning Division. The division is under the direction of a supervisor with headquarters at the central administrative office of the division. His central office staff consists of 2 assistant supervisors of refuse collection, a supervisor and assistant supervisor of street cleaning, and about 50 other employees. The annual appropriation for the division in 1946 was approximately \$7,500,000.

The central office administers all pay-roll and accounting procedures formerly performed in each ward. The abolishment of these administrative responsibilities has made the ward office strictly a field-operating unit and gives the ward superintendent and section foremen more time for the supervision of collection operations. Under central administrative controls all equipment and manpower are dispatched on the basis of the needs in each ward. This degree of flexibility, an important factor during the recent and critical shortage of equipment, was never possible under any previous administrative arrangement.

Under the present plan of organization the ward superintendent reports to the supervisor of the division. Although equipment and personnel are dispatched from ward to ward by the central administrative office, operations in a particular ward are conducted under the direction of the ward superintendent. There are 50 refuse-collection districts in the city of Chicago, with boundaries coterminous with those of the various wards of the city. The population of the wards varies from 28,058 to 92,123, and the areas vary from 1.23 to 19.30 square miles.

The ward office is strictly for office purposes and is not, as might be assumed, a headquarters at which equipment is housed, stored, or serviced and crews assembled. In many cases little equipment is housed in the vicinity of the ward, and no servicing of equipment is carried on at the ward level. Each ward superintendent is provided with a ward clerk and two or three section foremen, formerly known

as "alley inspectors." The number of employees and the amount of equipment in a particular ward varies in accordance with its needs. For example, one typical ward visited was operating three conveyor-type collection trucks. Two of the trucks regularly assigned to the ward were being operated two shifts per day. The third conveyor truck, on assignment from another ward, was being operated one shift per day in this ward and one shift per day in the ward from which it was assigned. The crew of each of the conveyor trucks consists of five men, one chauffeur and four loaders. Therefore, according to the superintendent, if collection were limited to one shift per truck per day, the requirements of this particular ward would be five conveyor trucks and twenty-five crew members. The ward visited has three section foremen, one for each of the three shifts.

The responsibilities and duties of the 165 section foremen assigned to the various wards are not entirely clear. Due to three-shift operation, caused by shortages of equipment, the section foremen have been given general supervisory duties. The principal responsibility of the foreman is reported to be supervision of the loading of trucks, and such other tasks as inspection of alleys and the notification of citizens concerning ordinance violations. During the progress of this survey very few foremen were observed supervising the loading of trucks, despite the obvious need of a "boss" on the job. Few were observed in the performance of other duties throughout the wards. It is reported that the number of section foremen was reduced considerably with reorganization of refuse collection service in 1945.

METHOD OF OPERATIONS The central administrative office of the Refuse Collection and Street Cleaning Division is responsible for the service furnished to all parts of the city. The frequency of service in a particular ward is, therefore, the responsibility of this office rather than of the ward superintendent. Variations in the quantities of refuse to be removed and occasional failures of equipment require constant adjustment through the shifting of personnel and equipment from ward to ward in order to maintain reasonably uniform service. It is not possible, nor would it be economical, to attempt to assign available equipment and manpower among all the wards on a permanent basis. A continuous analysis of conditions and operations is maintained by the central office in order efficiently to dispatch equipment to the areas of greatest need.

Although the ward superintendent has little to do with the assignment of facilities, except for keeping the central office informed as

to requirements, he is responsible for the maximum utilization of the equipment and manpower furnished to him. In planning and executing operations in the ward, the superintendent assigns each truck and crew to a definite route each day. The driver is required to bring the truck from its place of storage to a designated alley to which the loaders report at the beginning of the work day. Upon completion of each load the driver delivers the material to a designated disposal site where a check is made to determine if the truck has been loaded fully. The loaders sweep and clean alleys, remove refuse from vaults and prepare for the next loading operation while the truck is being driven to and from the point of disposal. The driver of the truck does not engage in or supervise loading operations.

Although the section foreman is responsible for supervision he is not always present and his activities appear to be more those of an inspector than of an actual boss on the job who is with the crew at all times. For example, there are four openings through which trucks may be loaded, two large openings on either side near the front of the body for large objects and two at the rear for the loading of material to be elevated by the conveyor. Lack of conventional type containers, i.e., garbage cans which can be emptied by hand, makes it necessary to shovel a considerable portion of the refuse into the conveyor openings at the rear of the truck. For this reason, the truck must be stopped as close to the material to be loaded as is practicable. In this position the truck is often so inconveniently situated for loading that not more than one loader can work at any given time. While lack of suitable containers is a substantial factor affecting the efficiency of loading operations, the absence of a foreman to direct and co-ordinate the work of the crew should not be overlooked.

The ward superintendent maintains a daily record of work accomplished. The completion of collections on each route is designated on a map which provides readily available information regarding the status and frequency of collections at any particular point in the ward.

Two types of route are employed in refuse collection, depending upon the point from which the container is removed from the premises. On an alley route all containers or receptacles are placed by the owner or tenant at the rear of the lot near the alley line. On a curb route, all containers are placed on the street curb by the owner or tenant on a specified day of the week. Although there may be some objections to placing the refuse container at the curb, many authori-

ties are of the opinion that curb collection has definite advantages over alley collections. In the first place, use of a proper-type container becomes almost automatic. Personal pride will prevent most citizens from storing or depositing refuse improperly in the "front yard." The resulting improvement in storage and in eliminating garbage from the vicinity of the alley is consequently an effective factor in maintaining municipal cleanliness. It also makes possible better service at the same expense, since time consumed and cost of collection are less on a curb route than on an alley route. Another important advantage in curb collection is that it permits use of the larger and more efficient type of collection vehicle, which cannot be used in narrow alleys because of its long turning radius. In Chicago, however, municipal collections are made on a curb-route basis in only about 15 percent of all the blocks serviced.

REFUSE COLLECTION EQUIPMENT All equipment used by the Refuse Collection and Street Cleaning Division is rented on an hourly basis from the Equipment Service Division of the Department of Streets and Electricity, which furnishes equipment to the operating divisions on a revolving-fund basis. This procedure does not mean, however, that the operating divisions lack freedom of action in the selection of equipment purchased or in its control while in service. The rental price to an operating division, such as the Division of Refuse Collection and Street Cleaning, includes all operating expenses and depreciation charges. The depreciation fund is set aside for the purchase of replacements. In general, this system assures the city of modern equipment without the necessity of requesting special appropriations for this purpose.

The city has instituted an efficient maintenance program to keep equipment in proper condition at all times. This program is similar to that which industry has used for some time. Although this program is not limited to the Refuse Collection and Street Cleaning Division, the many moving parts of the equipment used in this division and the hard usage it gets make preventive measures for its care of particular importance. Suitable equipment, adequate in quantity and properly maintained, is essential to any refuse-collection program. The cost of large crews demands that collection vehicles operate in an efficient and dependable manner. Mechanical failures in the field result in considerable loss to the city. The present program of preventive maintenance calls for the replacement of various parts of a vehicle at specified intervals based on the predetermined life of each

part. The Department of Streets and Electricity has requested and obtained approval on bond issues totaling \$1,000,000 for the construction of a new service garage. The completion of this project will be necessary before the preventive-maintenance program can be placed in complete operation.

The number of units of equipment in service in the Refuse Collection and Street Cleaning Division at the time of the survey, the rated capacity, and the type are listed in Table 41. Additional hired trucks

TABLE 41. REFUSE-COLLECTION EQUIPMENT IN SERVICE

| <i>Number of Units</i> | <i>Manufacturers' Rated Capacity (In cubic yards)</i> | <i>Type</i> |
|------------------------|---|-------------------------------|
| 99 | 21 | Conveyor units |
| 15 | 15 | Garwood packers |
| 2 | 9 | Garwood packers |
| 25 | 13 | Elgin Chief with compactor |
| 1 | 13 | Elgin Chief without compactor |
| 1 | 10 | Heil Colecto |
| 1 | 10 | Heil Colecto-Pak |
| 16 | 12 | Open dump bodies |
| 4 | 8 | Open dump bodies |
| 7 | .. | Semi tractors |
| 38 | 5-8 | Trailers (drawn by tractors) |

are placed in service as the situation demands. At the time of the survey, the city was hiring thirty-five open-body trucks for refuse collection. On November 8, 1945, an order was placed for 200 new conveyor-type trucks, with a rated capacity of 21 cubic yards per truck. These new vehicles will be particularly effective in helping to solve the equipment problem. Their use will make possible uniform weekly collections and will relieve existing equipment from excessive wear by reducing the number of operating shifts per day.

Maintenance of a 10 percent reserve of this type of equipment is recommended generally. In recent years, however, Chicago has maintained no reserve of refuse collection equipment. Consequently, removal of a piece of equipment from operation for repair necessitates a corresponding curtailment of service.

REFUSE CONTAINERS An adequate number of refuse containers of a satisfactory type is essential to the maintenance of a clean city. Suitable facilities not only are necessary for the temporary storage of refuse but also are essential to sanitary and efficient handling. The results of a recent survey, by the commissioner, of types of refuse containers at premises receiving municipal collection service are summarized in Table 42.

TABLE 42. TYPES OF CONTAINERS ON MUNICIPAL ROUTES^a

| <i>Container Types</i> | <i>Number of Stops^b Served</i> | <i>Percentage of Total Stops</i> |
|------------------------|---|----------------------------------|
| Standard | 80,000 | 15 |
| Concrete vaults | 134,000 | 25 |
| Oil drums | 34,000 | 6 |
| Miscellaneous | 164,000 | 31 |
| Missing | 124,000 | 23 |
| All types | 536,000 | 100 |

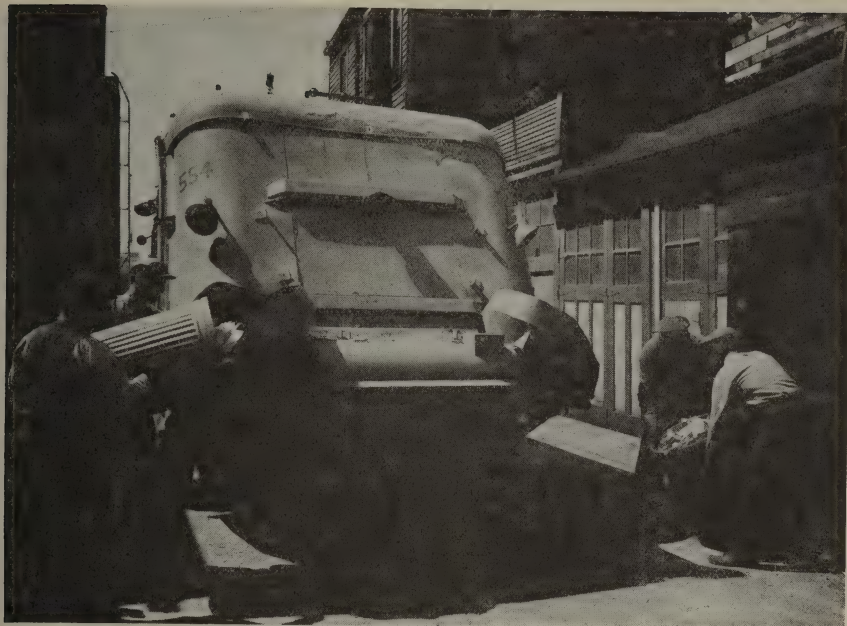
^a Curb routes included.^b Number dwelling units, 659,000.

The statistics in this table indicate that 85 percent of the collection stops were at premises where there was either no container or one of an unsuitable type. The types of containers in actual use were, in the order of frequency: (1) miscellaneous receptacles; (2) concrete vaults; (3) the standard type; (4) oil drums. Collection service cannot be maintained on an efficient basis under these conditions.

The enforcement of an ordinance enacted December 17, 1945, requiring "standard refuse containers," has been deferred until January 1, 1947, because reliable information indicated that suitable containers would not be available in quantity earlier.

The general requirements of a satisfactory refuse container are that it be water tight, have a tight-fitting cover, and be easy to wash. Section 99-15 (a) of the Municipal Code of Chicago defines the "standard refuse container" required by the city as follows: "The standard refuse container required by this Chapter shall be a receptacle of not less than twenty, nor more than thirty-two gallons capacity, of impervious material and sturdy construction, with a tight fitting cover, equipped with at least two handles properly placed to facilitate handling, and shall be subject to the approval of the Commissioner of Streets and Electricity." The information presented in Table 42 indicates that only 15 percent of the containers used on city collection routes are of standard type. The efficiency of the new collection equipment is dependent upon the use of standard containers of the type illustrated on page 000.

The stationary-vault type of container is objectionable because it cannot be maintained easily in fly-tight and rat-proof condition. It may also collect water and promote the breeding of mosquitoes. The method which must be used in removing the contents of this type of container is uneconomical and insanitary. Whereas the contents of a standard-type container may be emptied directly into the truck, the contents of the vault must be removed and shoveled into

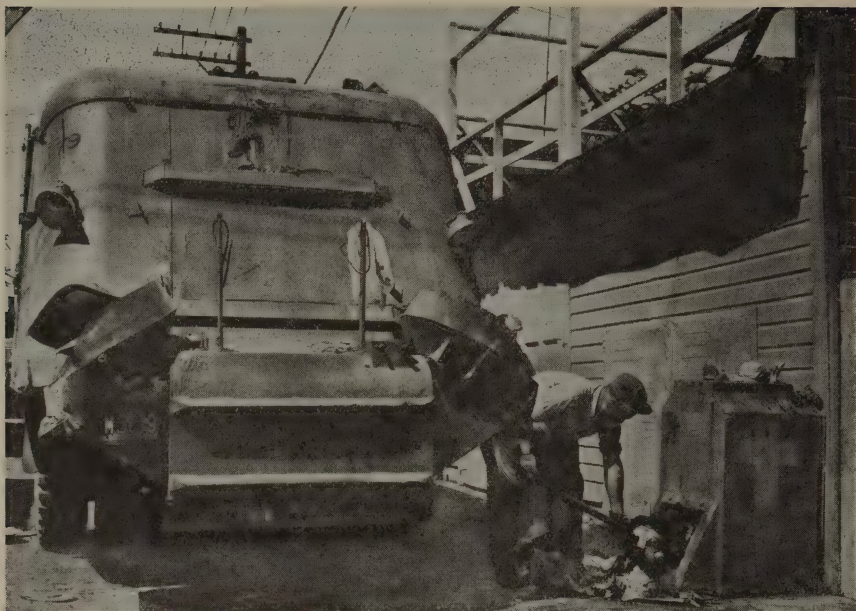


CITY OF CHICAGO REFUSE COLLECTION CREW EMPTYING CANS OF
REFUSE INTO HOPPERS OF CONVEYOR OR LOADING TRUCK

the truck. Much more time is consumed in loading by this operation, and even with the exercise of reasonable care, spillage will occur. This operation is shown on page 172.

The oil drum, as a container, has most of the objectionable characteristics of the stationary vault. It is usually uncovered, and consequently its contents are accessible to flies and rodents. In many cases, because of its weight, the contents are deposited in the alley and shoveled from the pavement into the truck. Neither the stationary vault nor the oil drum can be washed satisfactorily. Collection from the oil-drum type of container is shown on page 173.

Miscellaneous types of container, listed in Table 42, include about every imaginable type of receptacle. Some are paper cartons, which break apart when lifted. Very few, even of the better types of miscellaneous containers, are provided with covers. Many of the containers used are not only unsuitable as to construction and composition, but are generally inadequate in quantity and capacity for the temporary storage of refuse between weekly collections. As a result, containers overflow, and the spilled refuse contributes materially to the unsightly condition of many of the alleys.



REFUSE BEING SHOVELED FROM STATIONARY-VAULT TYPE OF
CONTAINER

Municipal officials, as well as many citizens, are aware that unsuitable types and an inadequate number of containers are responsible, to a considerable extent, for insanitary conditions in the alleys. The additional cost of collecting refuse from these various types of containers also is appreciable. This fact is realized fully by city officials, if not by the public.

Reduction of the rat population, which has attracted so much current interest, cannot be accomplished under present methods of refuse handling.

FREQUENCY OF COLLECTION SERVICE During the war period shortages of equipment and personnel made it impossible to maintain collection on as frequent schedules as would have been desirable. Despite a continued shortage of equipment, however, the service has been gradually improved through the reorganization of the Refuse Collection and Street Cleaning Division. This arrangement has permitted more expeditious employment of equipment and crews.

Municipal collection includes a total of 2,104 curb blocks and 14,467 alley blocks. During the week ending July 20, 1946, 2,104



REFUSE BEING DUMPED FROM OIL DRUM AND SHOVELED INTO
HOPPERS OF TRUCK

curb blocks and 12,848 alley blocks were serviced, and frequency of collection reached a 7.6-day basis. During the previous week collections were on an 8.2-day basis. The service has been improved continuously during the past year and is now being operated, for the first time in years, on a weekly basis.

ORDINANCES At the request of a subcommittee of the city council on improvement of refuse collection, the commissioner of streets and electricity conducted an investigation and submitted a report on June 26, 1945. The report contained a detailed analysis of many phases of the refuse-collection problem. Among the recommendations in the report were proposals for changes in the municipal code. Nine points recommended to the committee for consideration in revising the code were:

(1) Omit the terms "garbage," "ashes," and "miscellaneous wastes" and substitute the term "refuse" which should be defined.

These terms were written into the ordinance previously in effect because incineration requiring segregation of wastes was practiced at the

time the ordinance was enacted. With the abandonment of incineration and the collection of combined refuse, distinction among different types of waste became unnecessary.

(2) Designate the premises from which the city will collect refuse. The previous ordinance provided for the collection of certain refuse by private scavengers at certain places, it being understood that the city would collect from all remaining premises.

(3) Specify the size and type of refuse container to be used.

(4) Place the responsibility for furnishing an adequate number of satisfactory containers upon the owner.

The previous ordinance placed this responsibility on the owner, agent, or occupant.

(5) Establish the same standards for collection equipment used by private scavengers as for that used by the city.

Three years in which to accomplish this conversion was suggested.

(6) Provide for an increase in the \$25.00 per vehicle license fee charged private scavengers; require that each vehicle display a sticker indicating payment of the fee; and provide that the city collector issue the license only after the vehicle has been inspected and approved by the Bureau of Streets.

(7) Require each place of business using private scavenger service to display a sticker indicating that the business has contracted with a private scavenger for the collection of its refuse.

(8) Establish an appeal board to hear complaints against private scavengers.

(9) Require for all city alley collections that the container be located at the alley line but not in the alley; for all city curb collections that the container be placed at the curb line not earlier than the evening preceding the designated day of collection, and removed not later than the day of collection; for all collections by private scavengers that the refuse container be placed within the property lines but not on public property and in such manner that it will not constitute a nuisance to adjacent property.

Each of these recommendations required ordinance changes. With the exception of recommendation 4, which was altered to place the responsibility for furnishing containers upon the owner of multiple dwellings and upon the occupant of single family and occupational units, and recommendation 8, which was omitted, the general provision of the recommendations were incorporated in amendments to Sections 99-14 to 99-23, inclusive, and Sections 167-5, 167-6 and 167-7 of the municipal code, passed by the city council on December 17, 1945.

One consistent and serious weakness in the provisions of the municipal code relating to refuse is lack of reference to the Board of

Health. As nearly as can be determined the only specific responsibility vested in this body regarding refuse collection is contained in Paragraph (6) of Section 99-15 (Sanitary Refuse Container) which states that: "The sanitary refuse container required by this chapter shall be a receptacle constructed of impervious material and subject to the approval of the Board of Health."

This provision appears to be the result of inadvertent omission rather than intent, because all other sections referring to the Board of Health in the ordinance enacted on December 17, 1945, were amended by striking out the words "board of health" and inserting the words "commissioner of buildings" in lieu thereof.

The ordinance enacted on January 30, 1946, amending these sections of the municipal code was recommended to the Chicago City Council by the corporation counsel in a letter of January 15, 1946. The purpose of the amendments was to vest in the commissioner of buildings responsibility for certain functions formerly conducted by the Board of Health. This procedure was deemed necessary because of the enactment of an ordinance on January 9, 1946, which transferred the personnel and duties of the Community Sanitation Section, which was a sanitation inspection service in the Chicago Health Department, to the Department of Buildings, in which was established a Bureau of Housing Inspection.

The transfer of personnel and functions was based on a report prepared by the staff of the City of Chicago Budget Survey Committee in 1945. The purpose of the recommendation was to achieve co-ordination of inspectional services. It is most difficult to understand just why the responsibilities of the health department regarding garbage and refuse handling—responsibilities which have always been a part of public health—should have been transferred to the building department merely because certain inspectors are only assistants to the health officer and have nothing to do with his basic responsibilities. It is inconceivable that the health officer of the city of Chicago, responsible for the health of three and one-half million persons, should have practically no authority with regard to refuse collection and disposal. The municipal code is inadequate in this respect, with the result that the public health may be jeopardized.

Methods of refuse collection and disposal change from time to time, requiring revision of ordinances and practices. The amendments to the municipal code based on the recommendations of the commissioner of streets and electricity were needed to bring the

previous ordinances up to date. In general, the recommendations are consistent with accepted standards of practice in the field of municipal refuse collection, and the officials of the Department of Streets and Electricity responsible for the studies, recommendations, and ordinance revisions are to be commended. It must be recognized, however, that as the previous ordinances became obsolete, so will the present one when inevitable changes occur.

The present ordinance has eliminated much confusion with respect to the collection of ashes and miscellaneous wastes from business areas and large apartment buildings generally served by private scavengers. Previously it was necessary for the city to collect not in excess of two containers a week from each building in the city. The previous ordinance also required the city to collect all garbage upon request from any building.

Service is furnished free by the city to: single dwellings containing less than five apartments; multiple dwellings containing less than twenty rooms; multiple dwellings producing less than 32 gallons of refuse per week; multiple dwellings, each living unit of which is heated by the tenant; and occupational units producing less than 32 gallons of refuse per week and heated individually by the tenants.

Private scavenger service is provided at the expense of the owner to all multiple dwelling units and all occupational units except those serviced by the city.

PRIVATE SCAVENGER SERVICE Estimates indicate that approximately 160 private scavengers operated about 200 trucks in July, 1946. As of September 24, 1946, the city collector's office reported 112 licenses issued to offal scavengers and 215 licenses to private scavengers. Some operators were said to have both types of license. In 1945 licenses were issued for the operation of 210 private scavenger trucks. Approximately 70 percent of the private scavengers are members of the Chicago and Suburban Ash and Scavenger Association. This organization provides certain benefits, but has little to do with the operations of individual members, each of whom negotiates contracts with the establishments he serves and makes his own rules and regulations.

In general, restaurants are said to be serviced twice a week, small apartment houses once a week, and large apartment houses about twice a week. Many apartment houses are equipped with incinerators, so that the refuse removed is largely non-combustible material and ash. It is estimated that approximately 75 percent of the apartment houses in the city are serviced by private scavengers.

Charges are based on the quantity and type of material to be removed and the frequency of service stipulated in the contract. The average charge to a restaurant, for example, is reported to be from \$2.00 to \$4.00 per week for two collections. On this basis the average cost per cubic yard of refuse collected is reported to be about \$1.25.

Most of the private collectors operate a small enterprise utilizing one or two trucks. In general the collection trucks are of the open-dump type and average about ten cubic yards in capacity. Crews consist of two or three men, including the driver, who assists with loading operations.

Each private scavenger is required to obtain a license for each vehicle operated, the annual fee being \$100. Applications must be approved by the commissioners of both the Department of Buildings and the Department of Streets and Electricity, with respect to the health, sanitation, and safety provisions of the code. Section 167-5 of the municipal code contains an important provision that "all private scavengers will be required to replace old equipment, as it becomes unsuitable for the purpose for which it was originally intended, with modern enclosed vehicles of a type acceptable to the commissioner of streets and electricity." If enforced, this requirement should result ultimately in the maintenance by private scavenger of the same standards of equipment as those established by the city. A report of June 26, 1945, by the commissioner of streets and electricity included a recommendation in connection with contemplated ordinance revisions that private scavengers be allowed a period of three years in which to convert to modern types of enclosed collection equipment. Although the ordinance, as passed, may eventually accomplish the desired result, the time required for complete conversion will no doubt be considerably more than the three years. The importance of this provision to municipal sanitation may be realized if one observes fully loaded private-scavenger collection vehicles, on the city streets. Efficiency and economy of operation create an incentive to overload the trucks. With the open-type body, even when covered by a tarpaulin, there is considerable opportunity for light refuse, such as paper and cartons, to spill and scatter. This condition has been observed on many occasions throughout the city.

Section 167-7 of the municipal code contains another important provision which was enacted also in accordance with a recommendation of the commissioner of streets and electricity. This provision requires the private scavenger to furnish each customer a placard

containing the name and address of the scavenger preceded by the phrase "Private Scavenger Service Rendered By." The placard is to be posted in a conspicuous place near the point of collection of the premises serviced. This requirement, when fully complied with, will enable municipal authorities to determine those properties which are under contract for private scavenger service as well as those which have failed to provide this service. Where private scavengers collect and dispose of more than one third of the city's refuse, such a requirement is essential to effective enforcement of refuse-collection regulations.

STREET CLEANING BY CITY In addition to the collection of refuse, the division is responsible for street and alley cleaning and snow removal. Street cleaning is conducted under the general supervision of the central office of the division. It is carried on by approximately two hundred hand sweepers and ten mechanical sweepers. The personnel and equipment are under the direction of the superintendent of the ward in which they are working.

During the calendar year 1945, 87,988 curb-miles of street were hand-swept and cleared of dirt and 5,447 curb-miles were machine-swept; more than 13 million square yards of alley surface were cleaned, and weeds were removed from 12,491,596 square yards of public property. During this same year, snow was plowed from 2,479 lineal miles of street, and 9,283 cubic yards of snow were removed and hauled to points of disposal.

STREET CLEANING BY CHICAGO PARK DISTRICT The Chicago Park District cleans 400 curb-miles of parkways, streets, and roads under its jurisdiction. In general, three mechanical sweepers are operated one shift per day. Open dump trucks are used for collecting the sweepings and hauling them to points of disposal. This material is reported to be used for filling purposes.

PRIVATE STREET CLEANING ACTIVITIES An organization now composed of approximately 350 members was formed in 1901 for the purpose of supplementing municipal street cleaning services in a small section of the city. This organization is known as the North Central Improvement Association. The general area it serves lies east of Dearborn Street between Lincoln Park and Ohio Street. The association maintains about five employees. Its equipment consists of one motor-driven sprinkler and one horse-drawn wagon. Approximately $13\frac{1}{2}$ lineal miles of street are swept and sprinkled twice per week. Street sweepings are hauled to a refuse-disposal site.

RODENT EXTERMINATION The division contains a rat extermination section which consists of one supervisor in the central administrative office and one rat exterminator in each of the fifty wards of the city. The exterminators usually work in crews consisting of two or three men taken from the various wards. The principal activity of the rat exterminators consists of dusting burrows on public property with calcium cyanide (see Chapter 18).

EDUCATIONAL ACTIVITIES Recognizing the need of public cooperation, the Department of Streets and Electricity has carried on considerable educational activity during recent years. The educational program emphasizes the importance of two cardinal points, the provision of and the use of suitable refuse containers. These points have been illustrated pictorially and repeated time and again in bulletins. The considerable amount of publicity recently given by local newspapers to the refuse-collection situation is said to have been inspired largely by the city's educational program. An extremely important phase of the program, and one whose merit justifies its continuance, is the distribution of printed material to school children. Bulletins, covering the fundamentals of household sanitation prepared by the Department of Streets and Electricity, are distributed through the public schools. Considerable interest is said to have been exhibited by parents and teachers, as well as by school children. City officials believe that improvement has already resulted from this civic educational work in the schools. A program of this type not only has the advantage of reaching a large number of homes, but at the same time contributes to the training of future householders in the principles of municipal cleanliness.

CAFETERIA COURTS Despite extensive educational activities and extreme leniency in past years, municipal officials have concluded that more vigorous enforcement is essential. Because of the impracticability of bringing large numbers of cases involving carelessness in the handling of refuse into the municipal courts, an arrangement has been made whereby the violator may appear and pay a specified fine at a "Cafeteria Court." This procedure saves time for both city officials and violators and does not overload the courts with minor cases.

In general, warnings in the form of a written notice citing the violation and specifying the length of time permitted in which to comply are given prior to the issuance of a "ticket" to Cafeteria Court. If the violation continues, then a summons is issued and the

fine may be paid. The ticket is similar to that issued for traffic violations. On the reverse side are listed section numbers of the municipal code covering various violations, a description of the violation, and the amount of the penalty: "99-19 Dumping Refuse in alleys or vacant lots—\$5.00."

Upon appearing at the Cafeteria Court, the violator signs a waiver, pays a specified fine, and the case is completed. If the violator declines to sign the waiver, a warrant is issued, and the case is brought to municipal court for trial. More attention to enforcement, along with the educational program, has resulted in an immediate improvement of conditions in streets and alleys.

PRACTICAL INVESTIGATIONS Studies and surveys conducted by the Department of Streets and Electricity in recent years have clearly indicated that refuse collection and disposal, despite their importance, were receiving little technical direction. As an outgrowth of these studies, the divisions responsible for these services have been strengthened by the assignment of a few technically trained men who have undertaken scientific analyses of various phases of refuse collection and disposal. Improvements in service and at the same time, economies in operation have resulted. For many years other large municipalities have given similar attention to refuse-handling problems.

One of the outstanding achievements of the Chicago officials has been the development of an original method of "calibrating" refuse-collection vehicles. This method is said to have attracted the attention of manufacturers and municipal officials throughout the nation. The standardization of loads is particularly important in Chicago, because a large percentage of the refuse is disposed of at private dumps where charges are made on a yard basis. The weight method was considered at first, but subsequent studies revealed that weights of identical volumes of refuse loaded under similar conditions vary as much as 300 percent, depending upon the type of collection area, season of the year, and amount of precipitation. As a result, the weight method was eliminated from consideration in situations where the cost of disposal depended largely upon volume. It was then determined that standard units of volume should be established, and the cubic yard was selected as the unit of measure. Realizing that a unit of volume of refuse varies considerably, municipal officials agreed to define a cubic yard as the quantity of refuse contained in the space

of one cubic yard of properly loaded refuse under actual alley practice in an open-body truck. This cubic yard would, of course, remain constant for all conditions and for all types of equipment.

In order to determine the actual capacity of various types of equipment, a calibration procedure was established. This method consisted of dumping the contents of a truck and reloading the material on a calibration truck by manual means with a top man consolidating the refuse. In this way all types of loads from different pieces of equipment can be reduced to the same unit of measure. The refuse contained in a cubic yard of space loaded in this manner is referred to as a "calibration unit."

It was recognized, however, that the density obtained by this method of loading would not be achieved under practical alley-loading conditions. Consequently, the relation between an alley-loaded cubic yard of refuse and the "calibration unit," or cubic yard loaded under special conditions, was determined. This factor was found to be 1.18, meaning that 1.18 times the quantity of refuse could be loaded on the same piece of equipment under the calibration method of loading as under practical alley conditions.

Each type of refuse-collection equipment owned by the city has been calibrated for each season of the year. The practical applications of this ingenious method of calibrating equipment are many. In the first place it furnishes a yard stick, independent of the type of collection vehicle used, which is uniform from year to year for measuring the amount of refuse handled. It also permits comparison of costs on an equitable basis.

PERFORMANCE During 1945 the Refuse Collection and Street Cleaning Division collected 3,213,705 cubic yards of mixed refuse. Collection is estimated to cost \$1.50 per cubic yard. Since municipal collection is limited to only part of the dwellings in the city, no estimate can be made of the average per-capita cost. At the present time the city is estimated to be collecting approximately two-thirds of the total municipal refuse.

During 1944 and 1945 careful studies were made of the cost of collection for each of the various types of equipment. These costs varied from \$1.18 to \$1.97 per cubic yard. This information will be used in determining types of collection equipment best suited to conditions in Chicago. Analysis of the amount of refuse collected each month indicates that it does not vary greatly from month to

month, partly because ashes collected in the winter months combined with the refuse compensate for reduction in the quantity of bulky garbage.

A study was made of the yearly amounts of garbage collected during the 23-year period between 1923 and 1947. This study indicated that during the depression, when the per-capita production of waste declined, and during the war, when there were difficulties in obtaining labor and equipment, the amounts collected were lower than during the peak years of 1927 and 1940.

COMMENTS

In recent years the Department of Streets and Electricity has devoted considerable attention and study to refuse collection. Practical investigations of an original nature have been conducted and the results utilized advantageously. Various types of equipment have been procured for the purpose of analyzing the performance of each and determining its applicability to local conditions. Careful attention has been given to loading operations, and methods have been devised whereby the capacities of vehicles are utilized more adequately. Surveys have been conducted, reports prepared, and suggested ordinance changes submitted to the council for the purpose of improving the refuse collection service. As a result of these recommendations, ordinances have been amended to facilitate the work of the Refuse Collection and Street Cleaning Division and to improve the sanitary condition of the city. In the interest of promoting more general use of a satisfactory type of refuse container the department has carried on an intensive educational program which has been augmented recently by more rigorous enforcement of the code. The refuse collection service has been reorganized and a central administrative office established which relieves the ward superintendent of practically all administrative detail and permits him to devote more time to the supervision of collection operations. The increased centralized control under the present plan of organization also facilitates the maintenance of more uniform service throughout the city.

An analysis of the refuse collection problem and methods of solution indicate that the Department of Streets and Electricity is doing a far better job than the average citizen realizes. The question then may be asked—why are not all alleys and streets in a clean state at all times? Observations made during the survey indicate that a few factors are primarily responsible for the unclean condition of many

sections of the city. (1) An inadequate number of standard-type refuse containers is provided by the citizens of the city. (2) The Refuse Collection and Street Cleaning Division does not have sufficient collection equipment at the present time to render adequate and reliable service with the necessary frequency. (3) Only about two-thirds of the refuse produced is collected by the city, the remainder being handled by private scavengers. (4) Ordinances relating to collection of refuse, enforceable by departments other than the Department of Streets and Electricity, are improper, inadequate, and unenforced.

The relationship between an inadequate number of containers of a satisfactory type and the state of cleanliness of a city cannot be overemphasized. The Department of Streets and Electricity is endeavoring courageously to correct this condition, but it must have the support of every citizen. The householder who has no container or only an improvised receptacle may offer little objection to the procurement of a satisfactory type of container. On the other hand the citizen who, with the best of intentions, has provided what he had believed to be the most suitable container available, such as the stationary vault, may oppose strongly a change to a standard-type container. The educational program must be focused upon making clear the reasons for using standard containers. In the opinion of engineers who participated in the survey upon which this report is based, lack of standard containers may reduce the efficiency of refuse-loading operations by as much as 50 percent. This statement is particularly applicable to the use of some of the newer types of modern equipment designed to be loaded from standard containers. The intelligent taxpayer should be made aware of the actual saving in money which results from the use of containers of a proper type. In the past few years refuse-collection equipment has not been adequate to provide the degree of service desirable. Collection was established on a weekly basis only recently, reportedly the first time in years that it has been operated with this frequency. It requires utilization to maximum capacity of all municipal equipment, augmented at times by the hiring of privately owned trucks. Delivery of modern equipment, on order by the city for some time, is expected to solve the problem of equipment shortage.

In considering the refuse-collection problem in Chicago, the important role of the private scavenger must not be overlooked. In general, the private scavenger in this area operates only a few trucks.

These vehicles are of the open-dump type and do not lend themselves readily to operations which can be performed in a sanitary manner. A recently enacted ordinance requires private scavengers to replace all old equipment, as it becomes obsolete, with modern enclosed vehicles. Apparently this transition will take considerable time. During the interim, a substantial portion of the refuse may be collected by old and obsolete equipment. There are also many other weaknesses in the private scavenger system of refuse collection. In the first place, the service is not automatic. Unless arrangements are made by the property owner or occupant, the material is not collected. Contracts and agreements often cover only one type of refuse. A number of occupants and owners of places served by private scavengers have been questioned regarding waste collection. In several instances it was reported that weeks and months of accumulated refuse were not included in their regular collection arrangements. Sometimes this material is deposited in the alley so that it will be collected by the city. Routes of private scavengers overlap those of the city to a considerable extent. These conditions are not conducive to the maintenance of a clean city, and there is serious doubt that satisfactory standards of sanitation can be achieved under the existing system of dual refuse collection. It is, therefore, believed advisable that the city begin at once to plan the expansion of its refuse-collection service. The first extension of municipal service should include all family dwelling units whether located in a single house or in a multi-story apartment building.

The discussion in this chapter has revealed clearly the extent of the confusion in regard to enforcement of the public health and nuisance aspects of the ordinances relating to refuse disposal. While there is little evidence to indicate that these ordinances were enforced properly by the Board of Health, the Department of Buildings, which now carries most of these responsibilities, appears to be doing even less. It will be recalled that the president of the Board of Health was called upon in July, 1946, to use his powers to obtain the removal of refuse from the vicinity of a strike-bound building in the heart of Chicago, even though the enforcement of practically all ordinances relating to garbage disposal was at that time the responsibility of the Department of Buildings. The city should enact new ordinances, if they are necessary, or amend the existing ones, so as to make the Board of Health directly responsible for the enforcement of public health aspects of ordinances relating to refuse.

Although the immediate solution of these four problems (an adequate number and type of containers, a sufficient amount of collection equipment, expansion of municipal collection service, and revision of ordinances and clarification of responsibilities) is essential, there are other matters also upon which attention must be focused in order to improve the collection service and keep the city clean.

Designation of the 50 wards of the city as the 50 refuse-collection districts occurred many years ago, when collection equipment was entirely horse-drawn. In those days transportation and communication were such that supervision could be carried on, no doubt, most efficiently in comparatively small collection districts. Operations at the ward level brought the responsible supervisory officials closer to the people being served and also gave the alderman an opportunity to serve his constituents more adequately by interceding for them in refuse collection difficulties. On the other hand, the ward system lends itself readily to political abuse.

Although some decentralization of a refuse-collection organization is desirable, there is a question as to the size and the number of districts which will render maximum efficiency. There seems to be little reason except precedent for continuing the present refuse-collection districts. Certainly there would be obvious advantages in operating larger and fewer collection districts without regard to political subdivisions. Under this plan equipment could be assigned to each district on a basis which would be more nearly permanent. The superintendent would have more facilities at his disposal than does the present ward superintendent, and the work of dispatching equipment by the central office could be greatly reduced. Refuse-collection districts in urban portions of New York City contain an average population of 152,620 persons. The average population of the wards in Chicago is 67,936 persons.

The maintenance of fewer field offices would make possible the provision of more adequate quarters and facilities. Consideration should be given to the housing of equipment at these locations. Some servicing of equipment might be provided also at district headquarters if the districts were larger. At present, all equipment is serviced at the central garage of the Equipment Service Division at Twenty-third Street and Ashland Avenue. In discussing the assignment of equipment, New York authorities state that "each district has its own garage where equipment is stored and serviced. Equipment stored in district garage operates in district to which it is assigned." The

Department of Streets and Electricity in Chicago is now establishing garage facilities at loading stations where trucks and other refuse-collection equipment will be stored, maintained, and possibly given minor repair service. This plan may eliminate the necessity for providing such facilities in the collection districts.

The lack of supervision of loading operations has been witnessed repeatedly. Although this lack generally affects efficiency more than sanitation it has a bearing on both. In some cases one of the loaders assumes unofficially a role of "straw boss." A readily noticeable increase of efficiency results. It is doubtful that private industry would fail to provide immediate supervision of such a piece of equipment as one of the conveyor-type trucks and its five-man crew. The problem, however, is not a simple one. It is reported that on one occasion the city made an attempt to increase the remuneration of one of the loaders in each crew and to designate him as a working foreman—obviously a solution to the problem. For some reason or other this plan was never put into effect. In the meantime, inefficient loading continues.

RECOMMENDATIONS

It is recommended that:

1. Municipal refuse collection service be expanded to include the refuse from all buildings in the city except waste products from industry.
2. Consideration be given to a reduction in the number of collection districts irrespective of ward boundaries.
3. The present campaign to induce householders to provide and use the required type of refuse container be continued and intensified through an educational program and ordinance enforcement.
4. A member of each collection crew be designated as a working foreman in order to increase the efficiency of collection operations.
5. The scientific studies of the various phases of refuse collection conducted by the Department of Streets and Electricity be continued and intensified.
6. Municipal ordinances be revised restoring to the Board of Health all of its former responsibilities for refuse storage and collection.

METHODS OF REFUSE DISPOSAL IN CHICAGO

by *Gordon E. McCallum*

VARIOUS METHODS are used in the disposal of municipal refuse. A number of factors, some of which are of a local nature, will influence the method to be employed. Two basic principles, standards of sanitation and of economy, must be considered in all cases, however. The combustible portion of refuse may be collected separately and incinerated. Combined municipal refuse containing all types of waste products may be disposed of by sanitary landfill or open dump. Garbage, if separated from other material, may be handled by reduction, grinding, and treating with sewage, or by feeding to hogs.

REDUCTION OF GARBAGE

The reduction process consists of cooking garbage under steam pressure for the recovery of grease and tankage. The economy of this method depends primarily upon the price of grease. Although reduction can be carried on satisfactorily from the sanitation point of view, it requires a considerable outlay of capital for plant construction, involves a rather expensive process, and usually is considered economically unfeasible. In some instances the process has been conducted by private enterprise under municipal subsidy to compensate for low prices of grease. Unless equipped with modern facilities and carefully operated, the type of plant required for this process is likely to create a serious nuisance. In general a reduction plant must be located on the periphery of the city, far from the center of the collection area. Obviously, haulage costs in a large city would be considerably increased under these conditions. This method of garbage disposal is not considered suitable for the city of Chicago.

FEEDING OF GARBAGE TO HOGS

The feeding of garbage to swine has been practiced for some time by a large number of communities. It is more general among smaller

municipalities. Lansing, Michigan, disposed of its garbage by hog feeding for a number of years, but discontinued the practice some time ago, and garbage is now ground and digested at its sewage-treatment plant. There are a number of objections to the hog-feeding method of garbage disposal. Difficulty is often experienced in locating a suitable site for feeding, and hauling distances are likely to be increased. It is well recognized also that garbage-fed hogs show a higher incidence of trichinal infection. The possibility of infecting hogs with trichinae can, of course, be eliminated by cooking the garbage at 212° F for thirty minutes. This procedure adds considerably to the cost, however, and for this reason is frequently opposed by feeders.

In Chicago some of the garbage collected from restaurants by private scavengers is disposed of by feeding to hogs. It would not be feasible, however, to consider disposing of a large part of Chicago's garbage by this method.

DISPOSAL IN BODIES OF WATER

Some cities, particularly seacoast towns, dispose of garbage by depositing it in bodies of water. This method of disposal, however, has been losing favor for several years and has been discontinued and curtailed through legislation and court action in a number of instances. One serious objection to the method is that under certain conditions floating material and grease are blown back to the beach. It would be inappropriate for Chicago because of the probable pollution of Lake Michigan and the Drainage Canal.

COMBINING AND TREATING GARBAGE WITH SEWAGE

Some interest has been shown among municipal officials and consulting engineers during recent years in the disposal and treatment of garbage with sewage. A few experts foresee a time when each home will be equipped with a refuse grinder, from which the ground material will be discharged into the sewer and transported to the sewage-treatment plant as water-carried waste. At present, municipalities using this method haul the garbage to a central grinding plant and add the ground material either to a large sewer or to some unit of the sewage-treatment plant, frequently the sludge digestors. The treatment of garbage with sewage has been discussed rather thoroughly in the technical literature. Municipalities using this method of garbage disposal have found it both sanitary and economical.

Whether the ground garbage is admitted to an intercepting sewer or directly to the digestors at the sewage-treatment plant, its treatment consists primarily of digestion. The digestion process is essentially the same as that used for sewage sludge. A somewhat more rapid production of gas accompanies the digestion of garbage. A thorough study and appraisal of sewage treatment facilities must be made by a community before consideration can be given to the treatment of garbage at the sewage-treatment plant.

The Sanitary District of Chicago conducted a study of the feasibility of grinding garbage and discharging it to the intercepting sewer system. After thorough investigation a report was submitted in May, 1941. This report stated in part:

The suggestion that it might be practical and economical to provide a large number of garbage grinding stations at selected points along the intercepting sewer system of the Sanitary District, and thence transport the ground wastes hydraulically by way of the intercepting sewers to the existing Sanitary District sewage disposal plants, was quite thoroughly studied.

This plan was discarded because it is indicated that no substantial economy in delivering the ground garbage to the sewer treatment plant by this method could be realized, and in addition, the disposal of the garbage through the treatment plant processes would involve excessive additional operating costs; would require substantial expansion of existing Sanitary District facilities; would decrease, if not destroy, the value of the recovered sludge in its sale for fertilizer purposes, and might have a serious and detrimental effect upon the quality of the effluent from the sewage disposal plants.

In spite of this adverse report, the city and the Sanitary District of Chicago would do well to continue to keep abreast of research and developments in this field, since changes in method might make the process applicable to local use at some future date.

INCINERATION

A large number of communities practice incineration, or the burning of the combustible portion of municipal refuse. This method requires careful separation of combustible from noncombustible material. It has gained in popularity during the last few years, partly because of improvements in incinerator design.

A properly designed incinerator which burns carefully separated refuse can be operated without creating a nuisance. Improperly de-

signed or incorrectly operated incinerators are likely to cause nuisances and on occasions have resulted in court injunctions.

To function properly, an incinerator must be supplied with dry combustible and wet material in a ratio which will permit combustion at not less than 1,300 degrees F.¹ Unless this ratio is maintained, auxiliary fuel must be used to ensure complete combustion. This additional procedure, of course, adds materially to the cost of operation.

Incineration is usually regarded as one of the most sanitary methods of refuse disposal. To the lay observer it is frequently considered the ultimate in refuse disposal. It does have, however, certain limitations and objections as well as advantages. In the first place, it requires separation of combustible from noncombustible material and consequently necessitates more frequent collection. Segregation of refuse by the householder requires a continuous campaign of education and enforcement. A most important point, however, often overlooked, is the fact that incineration disposes of only a portion of municipal refuse. All the noncombustible material and the incinerator ash must be disposed of by other means. The location of an incinerator, with respect to existing as well as probable future land usages in the immediate vicinity, must be given careful consideration and may be a complicating factor.

Cities using incineration often do so because no other practical means of refuse disposal are available. Its over-all costs are usually higher than those incurred by other methods of disposal. Chicago operated an incinerator from 1928 to 1934. This plant received the combustible refuse from the north side of the city. The cost per ton of refuse burned proved to be so much greater than the operation of the open dump that incineration was finally discontinued. A study conducted by the Department of Streets and Electricity in 1943 indicated that incineration of combustible material would increase collection and disposal costs by \$0.32 and \$0.10 per cubic yard, respectively. The department estimates that in 1946 incineration would have required an increase of more than \$2,000,000 in the annual appropriation for refuse handling. Army experience is interesting. During the recent war the army discontinued the use of a number of incinerators and substituted the sanitary land-fill method of disposal, primarily because it was found more efficient, more sanitary, and more economical.

¹ Some authorities prefer 1,600 degrees F.



DUMP AT 118TH STREET AND DOTY AVENUE

DISPOSAL BY OPEN DUMP

Deposition of refuse at open dumps is one of the oldest and most widely used methods of disposal. The town dump of the small community is almost a tradition. The dump site is frequently a gully, a marsh area, or an abandoned clay or gravel pit. If suitable sites are available within reasonable hauling distance, dumping represents



DUMP AT 108TH STREET AND LAKE CALUMET

the most economical method. Economy is, in fact, the primary reason for its general use.

Dumps range in type from those which are open to those which are well regulated and carefully maintained. When completed, the latter type resembles to some extent the finished sanitary landfill.

No method of open dumping is satisfactory from the public health point of view. The unprotected refuse permits an unusually rapid production of flies and supports a large fly population. Water often present in uncrushed garbage containers or in the depressions where garbage may be dumped fosters production of mosquitoes. Dumps also provide ideal conditions for the breeding of rats and other vermin. Both harborage and food for the rat are ever present. Few open dumps, even among well-operated ones, fail to show some infestation of rats.

There are also other objections to the open dump. It is vulnerable to fire and in certain locations may constitute a serious fire hazard. Acrid smoke and odor nuisances may be so intense as to affect adversely property values as well as the comfort of citizens in near-by areas.

With the exception of garbage from certain business establishments, all the refuse collected in Chicago by city and private scavengers is disposed of in open dumps. Dumps owned and operated by the city are maintained in as satisfactory condition as is feasible with this method of disposal. Privately owned dumps which are supervised and partly utilized by the city are maintained fairly well. Some of the privately operated dumps, however, are under little supervision, are poorly maintained, and exhibit practically all the objectionable features just discussed. The illustrations on page 191 show these conditions vividly.

SANITARY LANDFILL

A number of American cities, both large and small, use the sanitary landfill method of refuse disposal satisfactorily and economically. This method is also utilized successfully in a number of cities in Great Britain and is referred to as "controlled tipping." In the United States the term "cut and cover" method of disposal is sometimes employed. It was used extensively at Army posts during the recent war.

The sanitary landfill method was developed primarily to overcome objections to the open-dump method while at the same time

retaining its economies. There has been adequate demonstration that the landfill method, if properly operated, will eliminate practically all the undesirable characteristics of the open dump. It has been shown also that no other method of refuse disposal which meets accepted standards of sanitation can be operated so economically. For example, New York authorities report that changing from incineration to the sanitary landfill method reduced the cost of refuse disposal from \$0.255 to \$0.076 per cubic yard. The army reported that their costs were substantially reduced as a result of the change from incineration to the sanitary landfill method.



SANITARY LANDFILL, SHOWING EARLY COVER-OVER FACE AND
FINISHED FILL

Although, in general, the principles which govern selection of sites to be used for open dumps apply to the selection of sanitary landfills, sites may be utilized for sanitary landfill which would be unsuitable for open dumping because of the likelihood of nuisance complaints. Low areas such as marshes, tidal estuaries, abandoned clay and gravel pits are usually satisfactory sites for disposal by sanitary landfill if suitable cover material is available. For example, a sanitary landfill constructed in an arm of San Francisco Bay is used for the disposal of refuse from San Francisco. This land is owned by the Southern Pacific Railroad and will be used after reclamation in the construction of railroad yards. The privilege of utilizing sites not already publicly owned is often extended without cost because of the advantage which accrues to the owner, since the reclamation of property which may be otherwise practically worthless greatly en-

hances its value. Unfortunately, this practice has not been the case in Chicago which has paid considerable sums of money for the privilege of dumping and improving private property previously of little value except for use as a dump.

The sanitary landfill method of disposal consists of depositing combined refuse in layers, which, when thoroughly compacted by leveling and bulldozing, are approximately six feet in depth. At the end of each day's operation the exposed refuse is covered completely by two feet of earth. In this way the refuse deposited daily is sealed completely from the remainder of the fill. This system of sealing and compacting reduces the possibility of rat and vermin infestation, controls odor nuisances, and eliminates fire hazard and smoke nuisance. A portion of a sanitary landfill is shown on page 193.

Various factors which govern practices in operating a sanitary landfill are the size of the municipality, the degree of isolation of the disposal site, its type, the availability of cover material, and the type of equipment to be used. It is universally recommended that the layers of fill be not greater than six to eight feet deep. This practice not only maintains the fill in a more satisfactory condition while it is under construction but also minimizes settlement and provides land more suitable for future use.

An interesting court case involving the sanitary landfill method of refuse disposal occurred in the Borough of Queens, New York, in 1939. Criminal action was instituted against the commissioners of sanitation and health for establishing and maintaining a nuisance in violation of city ordinances. It was alleged that the method of refuse disposal being used constituted a menace to the public health. In considering the case and establishing the facts, the Chief Justice of the Bronx Supreme Court in New York requested the Surgeon General of the United States Public Health Service to name a board of experts to study and report upon the public health aspects of the landfills specified in the suit. The board made some very significant observations and arrived at the following important conclusions:

There is a sharp distinction between the regulated landfill and the ordinary unsightly town dump which is mostly made up of ashes and dry refuse, but which may also contain some dry garbage. There is frequently no planning or supervision exercised so that these dumps are generally unsatisfactory. Sanitary landfills, however, differ from the usual dumps in several important respects:

First, the mixed refuse contains garbage and organic matter subject to

decomposition; second, the deposited refuse is compacted by mechanical equipment; third, the deposit is covered as rapidly as possible by a layer of earth; and fourth, the operations are supervised according to practice based upon study and experience.

The findings and recommendations of the board were as follows:

In the opinion of the board, based upon its observations and studies, there were no present conditions at the landfills which endangered the public health or safety. On the contrary, the board was convinced that certain potential public health hazards were removed by the landfills, as filling is one of the best methods of rat and mosquito control for swamps and marshes. The board was also of the opinion that no future dangers to the public health or safety would arise so long as sound sanitary practice was continued.

The court instructed the board to confine its studies entirely to dangers to public health and safety. Four main points were considered in the study: conditions favoring the propagation of rats and other rodents; conditions favoring the breeding of insects such as flies and mosquitoes; the possibility of fire originating in the combustible material of the fill; the weight-bearing value of the completed fill for future building operations. Recognizing the extreme importance of proper maintenance and careful sanitary control, the board in the New York case made the following recommendations for the operation of a sanitary landfill:

1. The disposal of wastes by the landfill method should be planned as an engineering project. Operations and maintenance should be under the direction of a sanitary engineer.

2. The face of the working fill should be kept as narrow as is consistent with proper operation of trucks and equipment in order that the area of waste material exposed during the operating day be minimal.

3. The exposed surface should be covered with earth as promptly as is consistent with proper operation, and at the close of each day's operation both the surface and the face of the fill should be completely covered, the object being to make a closed cell of each day's deposit.

4. Sufficient standby equipment should be provided to prevent delay in covering, because of break-downs or peak loads.

5. Waste building material, concrete, or other bulky waste material which may furnish rat harborage should not be used for the final surface or side slopes, but should be promptly incorporated within the fill.

6. The final covering for surface and side slopes should be maintained at a depth of approximately 24 inches.

7. In case the finished fill has a boundary side slope, the toe of the slope should terminate in a sand-and-gravel-filled ditch. This will prevent

raveling of the toe with exposure of some of the waste material, will prevent the burrowing of rodents, and finally will obviate puddles by permitting seepage from the fill to be absorbed into the ground.

8. Spraying of the exposed waste material and adjacent surfaces should be used when necessary to allay dust.

9. As a rule, the layer of refuse should not exceed an average depth of about 8 feet after compacting. Where deeper fills are necessary the filling should be carried on in stages.

10. Control over the scattering of papers by the wind should be adequately maintained by the use of movable snow fencing.

11. While the maintenance of proper earth covering as hereinbefore recommended will to a large extent prevent fires, water under pressure should be available for fire-fighting purposes. If scavengers are tolerated, they should be adequately supervised.

12. All collections of surface water resulting from these landfill operations should be drained, filled, or treated with effective chemicals so as to prevent mosquito production or allay disagreeable odors.

13. Where necessary, effective steps should be taken to prevent floatage of waste material into open water.

14. Inspection for and control of rodents should be maintained until fills are stabilized.

15. After the active period of the filling operations is completed, a maintenance program should be continued until the fill has become stabilized so as to insure prompt repair of cracks, depressions, and erosion of the surface and side slopes.

INFLUENCE OF TYPES OF REFUSE ON COLLECTION AND DISPOSAL METHODS

The type of refuse produced and the method of collection employed will influence the method of disposal. Since 1934, when operation of the incinerator on Goose Island was discontinued, Chicago has required no segregation of refuse collected by the city. The combined refuse collected and disposed of by the city at dumps consists of garbage, ashes, cinders, cardboard cartons, tin cans, glass containers, tree trimmings, papers, wooden boxes, rags, metal objects, and about every other imaginable type of rubbish. An example of the type of material found in mixed refuse is shown on page 191. The composition of this waste material varies with the seasons of the year and the changing habits of the householder. A study by the Department of Streets and Electricity covering a period of one year indicated that the garbage content averaged approximately 10 percent of the total in mixed refuse. This ratio is somewhat lower in winter months, when the amount of garbage is less and the volume of ashes greater.

The weight of the mixed refuse produced in Chicago averages about 700 pounds per cubic yard.

The combined collection of all refuse definitely limits the available methods of disposal. In Chicago, disposal by sanitary landfill, which will be described later, appears to be the most practical means for the disposal of combined refuse.

ORGANIZATION OF REFUSE DISPOSAL DIVISION

The disposal of refuse collected by the city of Chicago is a function of the Refuse Disposal Division, Bureau of Streets, Department of Streets and Electricity. The chief of the division, whose title is "manager of properties," reports to the commissioner of streets and electricity. Only four employees work in the office of the division. The entire division has a total of approximately ninety employees, most of whom are listed according to job classification in Tables 43 and

TABLE 43. NUMBER OF EMPLOYEES, TYPE OF EQUIPMENT, AND NUMBER OF SHIFTS PER DAY LOADING STATIONS ARE IN OPERATION

| <i>Dump Number</i> | <i>Location</i> | <i>City Employees</i> | <i>City Equipment</i> | <i>Number Shifts per Day</i> |
|------------------------|---------------------------|---|-----------------------------|--------------------------------------|
| 6 | 40th St. and Ashland Ave. | 3 dump foremen 2 laborers as checkers 6 laborers | 2 camp wagons hand tools | 3 |
| 7 | S. Water St. and I.C. RR. | 1 dump foreman 2 laborers as checkers 2 laborers | 1 camp wagon hand tools | 2 |
| 8 | 26th St. and I.C. RR. | 2 dump foremen 1 laborer as checker 3 laborers | Necessary hand tools | 3 |

44. One of the foremen at the dump at Wrightwood and Narragansett avenues also acts in the capacity of assistant to the manager of properties.

The actual expenditures and appropriations of the division were not readily obtainable, because laborers are paid from a different appropriation and their number varies from time to time. The 1946 appropriations from all sources amounted to approximately \$990,-820, of which about \$170,000 was allotted for the pay of laborers. The 1947 appropriation requested by the division is \$971,254.39.

The division appears to be well organized and competently di-

TABLE 44. NUMBER OF EMPLOYEES, TYPE OF EQUIPMENT, AND NUMBER OF SHIFTS PER DAY AT DUMPS USED BY THE CITY

| <i>Dump Number</i> | <i>Location</i> | <i>City Employees</i> | <i>City Equipment</i> | <i>Number Shifts per Day</i> | <i>Ownership</i> |
|--------------------|---------------------------------------|---|--|------------------------------|------------------|
| 3 | 19th St. and Wolcott Ave. | 4 dump foremen 1 tractor driver 2 laborers | 1 bulldozer and hand tools | 3 | Private |
| 4 | Wrightwood Ave. and Narragansett Ave. | 6 laborers as checkers 11 laborers 2 tractor drivers | 2 bulldozers 3 camp wagons and hand tools | 3 | Private |
| 5 | 103d St. and Lake Calumet | 2 dump foremen 4 laborers as checkers 7 laborers 1 watchman 3 tractor drivers | 1 bulldozer 3 camp wagons and hand tools | 2 (occasionally 3) | City of Chicago |
| 10 | Sacramento Ave. and 28th St. | 2 dump foremen 1 laborer as checker 3 laborers as guards 8 laborers 2 tractor drivers | 1 bulldozer 3 camp wagons and hand tools | 2 | City of Chicago |

rected. The primary duties of the laborers at the loading station and dumps are said to be the dumping of trailers, cleaning of trucks, and the repair of roads at municipal dumps. Laborers are permitted to engage in personal salvage when they are not occupied by other duties. From occasional visits to disposal sites during the current survey, it would appear that considerable time is devoted by these workmen to personal salvage. This practice was permitted originally as an inducement for men to engage in this type of work at a time when laborers were difficult to obtain. One reason for permitting the activity to continue is the contention that salvage of glass objects has reduced materially the damage to truck tires at the disposal sites.

DISPOSAL SITES IN CHICAGO AREA

Chicago is particularly fortunate in having potentially available an unusually large number of abandoned clay holes, stone quarries, and lowlands, which may be used conveniently as refuse disposal sites. The city owns approximately 300 acres of marshland at Lake Calumet, which are well isolated and constitute a particularly suitable refuse disposal site. The estimated capacities of these sites are given in Table 45. The existing and potential sites are fairly well distributed and are accessible to all sections of the city.

TABLE 45. EXISTING AND POTENTIAL REFUSE DISPOSAL SITES IN VICINITY OF CHICAGO

| <i>Location Number</i> | <i>Location</i> | <i>Type</i> | <i>Estimated Capacity^a (In cu. yds. of refuse)</i> |
|------------------------|---|-----------------|---|
| 1 ^b | 39th St. and Cicero Ave. | Clay Pit | 1,000,000 |
| 2 ^b | 31st St. and Cicero Ave. | Lowland | 1,000,000 |
| 3 ^b | 19th St. and Wolcott Ave. | Quarry | 3,000,000 |
| 4 ^b | Wrightwood Ave. and Narragansett Ave. | Clay Pit | 500,000 |
| 5 ^b | 103d St. and Lake Calumet | Marsh | 10,000,000 |
| 6 ^b | 40th St. and Ashland Ave. | Loading Station | 24,000,000 |
| 7 ^b | South Water St. and I.C. RR. | Loading Station | |
| 8 ^b | 26th St. and I.C. RR. | Loading Station | |
| 9 ^b | 3600 Touhy Ave. | Loading Station | |
| 10 ^b | Sacramento Ave. and 28th St. | Quarry | 3,000,000 |
| 11 | Lake Calumet | Marsh | 5,000,000 |
| 12 | West arm of S. fork of S. branch of Chicago River | River | 1,000,000 |
| 13 | Illinois and Michigan Canal | Canal | 3,000,000 |
| 14 | Touhy Avenue and Sacramento | Clay Pit | 15,000,000 |
| 15 | Halsted St. and 27th St. | Quarry | 10,000,000 |
| 16 | Irving Park Rd.—Schiller Park | Clay Pit | 2,000,000 |
| 17 | West Side Doty Ave.—125th | Marsh | 1,500,000 |
| 18 | Lake Ave. and Harlem Ave. (Glenview) | Clay Pit | 20,000,000 |
| 19 | Howard and McCormick | Clay Pit | 1,000,000 |
| 20 | 118th St. and Doty Ave. | Lowland | 500,000 |
| 21 | 125th St. and Kedzie Ave. (East Side) | Gravel Pit | 500,000 |
| 22 | 119th St. and C.R.I. & P. RR (Racine Ave.) | Clay Pit | 10,000,000 |
| 23 | 126th St. and Indiana State Line | Lowland & Lake | 15,000,000 |
| 24 | Joliet Rd. and East Ave. (Hodgkins) | Quarry | 15,000,000 |
| 25 | Joliet Rd. and 55th St. (McCook) | Quarry | 15,000,000 |
| 26 | East Ave. and 47th St. (McCook) | Quarry | 10,000,000 |
| 27 | Harrison St. and Manheim Rd. (Hillside) | Quarry | 10,000,000 |
| 28 | 63d St. to 79th St. ATSF Ry. to Despl. River | Low | 15,000,000 |
| 29 | 137 St. and Loomis St. | Clay Pit | 5,000,000 |
| 30 | 137 St. and Sangamon St. (Riverdale) | Clay Pit | 10,000,000 |
| 31 | 142d St. and Cottage Grove Ave. (Dolton) | Clay Pit | 10,000,000 |
| 32 | 137th St. and Dorchester Ave. | Clay Pit | 10,000,000 |
| 33 | 141st St. and Woodlawn Ave. (Dolton) | Clay Pit | 6,000,000 |
| 34 | 171st St. and Torrence Ave. (Lansing) | Clay Pit | 5,000,000 |
| 35 | Ridge Rd. and Vincennes Ave. (Thornton) | Quarry | 100,000,000 |
| 36 | 125th St. and California Ave. | 2 Clay Pits | 12,000,000 |
| 37 | 125th St. and Kedzie Ave. (West Side) | Pond | 4,000,000 |

^a Visual estimates were made of cubic yards of volume in disposal sites. Capacities in cu. yds. of refuse were obtained by assuming 3 cu. yds. of refuse to each cu. yd. of volume.

^b In present use by the city.

The full advantages of the favorable locations of these disposal sites may be realized only through careful planning and programing for their integrated use over a period of several years. Some factors which require consideration are length of haul, cost of operation, convenience and ultimate capacity of disposal site, available cover

material, existing and future land usages, and type of equipment and mode of transportation to be employed.

POINTS OF DISPOSAL USED BY CITY City collection vehicles deliver refuse to seven locations: three railroad loading stations owned and operated by a contractor, two municipally owned and operated dumps, and two privately owned dumps. In Table 45 the loading stations are designated as 6, 7, and 8; the two dumps owned and operated by the city, as 5 and 10; the two privately owned dumps used by the city, as 3 and 4. The privately owned dumps also receive refuse from private scavengers, building contractors, and others who are willing to pay for the privilege of dumping. The city furnishes supervision and personnel to operate and maintain the privately owned dumps used by the city as well as the municipal dumps, an item of expense in addition to the contract cost of dumping at a stipulated rate per cubic yard. Only one of these points, Dump 4, is conveniently located with respect to the northern portion of the city. This site consists of a clay pit which has been completely filled, and the dump has been extended several feet above street grade. At the present time, the establishment of either a loading station or a disposal site in the northern section of the city is under consideration. If this plan is carried through, the efficiency and economy of operation will be increased and the service will be improved in this area.

The city recently discontinued the use of sites 1 and 2, which are located outside the city boundaries. All the other dumps are within the Chicago city limits.

LOADING STATIONS

The three loading stations are owned and operated by the Illinois Development Company, which contracts with the city for the transportation and disposal of municipally collected refuse. Each of the loading stations is of similar design and layout. They are used for transferring refuse from city collection trucks to railroad cars in which it is transported to the point of disposal. Loading stations are used, and the refuse is hauled partly by rail because in a long haul this method is usually more economical than operation of the collection truck to the disposal site. In Chicago refuse is handled by private contractor after it reaches the loading station. The illustration on page 201 shows loading station 6, located at Ashland Avenue and Fortieth Street. This loading station consists of a longitudinal trench approximately 10 feet in depth, 20 feet in width, and 300

feet in length, with a roadway extending along one side and two parallel railroad spurs along the other.

Refuse is handled in two operations at this type of loading station. The rear of the truck operating on the roadway is placed near the edge of the trench and the contents deposited. The dumping operations are extended along the trench as it becomes filled. Water is sprinkled on the refuse in the trench for the purpose of controlling dust and compacting the material. A railway-mounted "clamshell,"



LOADING STATION AT ASHLAND AVENUE AND FORTIETH STREET,
WHERE REFUSE IS DUMPED FROM TRUCK OR TRAILER TO BE RELOADED
ON CARS FOR SHIPMENT TO DISPOSAL POINT

operating on the track adjacent to the trench, loads refuse to railroad gondola cars located on an adjacent track. The wet material is compacted to a considerable extent during loading. Approximately 150–160 cubic yards of refuse are said to be loaded on a car of 40,000 pounds capacity.

At the end of each day's operations the loaded railway cars are hauled to the point of disposal. All the refuse from loading stations 7 and 8 and part of that from No. 6 are disposed of at a privately operated dump on city property at 108th Street and Doty Avenue. Approximately 1,800 cubic yards of material per day are reported to be disposed of at this site. The remainder of the refuse from loading station 6 is hauled to a privately owned and operated dump at McCook, Illinois.

Table 46 gives the average amounts of refuse received daily at each loading station, together with unit costs. Table 47 shows the total quantities of refuse handled at each loading station in 1944 and 1945.

TABLE 46. AVERAGE DAILY AMOUNTS OF REFUSE RECEIVED AND UNIT COSTS AT DIFFERENT LOADING STATIONS IN CHICAGO

| <i>Number</i> | <i>Location</i> | <i>Average Received Daily (In cu. yds.)</i> | <i>Contract Cost per Cu. Yd.</i> | <i>Cost of Checking Supervision and Labor</i> | <i>Total Disposal Cost per Cu. Yd.</i> |
|---------------|---------------------------|---|--|---|--|
| 6 | 40th St. and Ashland Ave. | 1,750 | \$0.3,250 | \$.0350 | \$.360 |
| 7 | S. Water St. and I.C. RR. | 1,000 | 0.3,009 | .0651 | .366 |
| 8 | 26th St. and I.C. RR. | 875 | 0.3,009 | .0451 | .346 |

TABLE 47. TOTAL AMOUNTS OF REFUSE RECEIVED AT DIFFERENT LOADING STATIONS IN CHICAGO IN 1944 AND 1945

| <i>Number</i> | <i>Location</i> | REFUSE HANDLED (IN CUBIC YARDS) | |
|---------------|---------------------------|------------------------------------|-------------|
| | | <i>1944</i> | <i>1945</i> |
| 6 | 40th St. and Ashland Ave. | 376,768 | 251,676 |
| 7 | S. Water St. and I.C. RR. | 231,219 | 223,056 |
| 8 | 26th St. and I.C. RR. | 211,913 | 392,804 |

An additional loading station, located at Touhy Avenue and McCormick Road, received 425,888 cubic yards of refuse in 1945. Operation of this loading station has been discontinued, and the waste material formerly disposed of through this station has been diverted to other disposal sites.

Although the loading stations are owned and operated by a contractor, the city maintains a few employees to check loads, supervise operations, and perform other tasks at each of the three stations on each shift. The number and type of loading station employees are listed in Table 43. A checker is needed to ascertain and report on the quantity of material in each load, because the contractor is paid on this basis. Whether it is necessary for the city to furnish a foreman and laborers is open to question.

The construction of the present stations and the methods of operation do not lend themselves to good sanitary practices. The earth roadways traversed by the incoming and outgoing trucks are a constant source of dust. Hundreds of cubic yards of exposed refuse in the trench, as well as that on the loaded railway cars, leave much to be desired. Small amounts of refuse are dropped continuously during the loading of the cars. Much of this material lodges between the

railroad ties and remains there. The trenches are not lined with concrete, but are curbed with timber, which permits the retention of sufficient material to be offensive at all times.

Field inspections of the loading stations showed that flies were numerous, and there was evidence of rat infestation throughout the immediate areas. The maintenance of adequate sanitation under such unfavorable conditions is so difficult that its achievement can scarcely be expected. The significance of these conditions can be comprehended more readily when it is realized that the loading stations are not isolated, as are many of the disposal sites, but are located in highly developed sections of the city. Construction of these stations so that they can be cleaned properly is, therefore, particularly important.

REFUSE DUMPS USED BY THE CITY OF CHICAGO

Table 48 shows the eight dumps in Chicago which are in active use. Of the four dumps used by the city, two are municipally owned.

TABLE 48. NUMBER, LOCATION, OWNERSHIP, AND TYPE OF
REFUSE DUMPS IN CHICAGO

| <i>Disposal Site Number</i> | <i>Location</i> | <i>Ownership</i> | <i>Used by</i> | <i>Type</i> |
|-------------------------------------|--|--------------------|---|----------------------|
| 3 | 19th St. & Wolcott Ave. | Private | City of Chicago and private scavengers | Quarry |
| 4 | Wrightwood Ave. and Nar- ragansett Ave. | Private | City of Chicago and private scavengers | Clay pit |
| 5 | 103d St. and Lake Calumet | City of Chicago | City of Chicago | Marsh |
| 5 | 108th St. and Lake Calumet | City of Chicago | Contractor operating loading staff | Marsh |
| 10 | Sacramento Ave. and 28th St. | City of Chicago | City of Chicago | Quarry |
| 17 | West Side Doty Ave. at 125th St. | Private | Private scavengers | Marsh |
| 20 | 118th St. and Doty Ave. | Private | Private scavengers | Low land |
| 23 | Avenue A. and Indiana State Line | Private | Private scavengers | Low land and lake |

Over these the Refuse Disposal Division exercises direct control. Some supervision is given to the two private dumps also used by the city.

Private scavengers ordinarily dump refuse on a different portion of the disposal site from that used by the city when both utilize the same private dump. In some cases, however, certain types of material, such as ashes, cinders, earth, and other inert material, delivered

by private scavengers may be used when needed to cover mixed refuse disposed of by the city. Employees and equipment provided at the four dumps used by the city are shown in Table 44.

DUMP AT NINETEENTH STREET AND WOLCOTT AVENUE This dump, owned and operated by the Union Lime Works, is the type of disposal site referred to by the city as a pay dump, which means that the city pays the owner for the privilege of dumping. It is operated in an abandoned quarry which occupies an area of about ten acres located in close proximity to commercial and residential districts. At the beginning of operations the quarry was 385 feet in depth and partly filled with water. In October of 1938 a court order was issued which forbade the deposition of garbage and other objectionable material at this dump. During the following two years this disposal site is reported to have been little used. On June 20, 1940, however, the court order was modified to permit operation of the dump subject to certain limitations. The order requires periodic treatment of the dump with chlorine, which it refers to as a "scientific process." It also excludes the dumping of offal, putrescible material, or combustible refuse other than the amounts contained in the combined refuse collected in Chicago. This disposal site is now receiving approximately 1,050 cubic yards of municipal refuse per day and a very small quantity, estimated to be less than 100 cubic yards per day, of inert material from private scavengers.

Difficulty has been experienced at this disposal site by the formation of gas and its emergence through fissures in the finished fill. In some instances the fissures have been covered with oil drums or other receptacle, and the gas has been ignited. When visited by field investigators in July, 1946, flies were prevalent, and there was evidence of considerable rat infestation in the area surrounding the dump.

DUMP AT NARRAGANSETT AVENUE AND WRIGHTWOOD AVENUE This dump is another "pay dump" and is owned by the Carey Brick Company. It consists of an abandoned clay pit which contains an area of approximately 20 acres. About 3,450 cubic yards of refuse are delivered daily by the city to this dump. Private scavengers are permitted to dump only inert material used for cover.

The clay hole has been filled completely, and the dump has been extended and terraced to a height of approximately twenty feet above grade. When visited, there was considerable exposed refuse to which cover had not been applied. Flies were found to be numerous, but odors, although present, were not particularly objectionable.

This dump was closed for a short period in 1940 because of a court injunction obtained by local property owners. On June 25, 1940, an order was issued by the Circuit Court of Cook County permitting the city to continue to dump refuse and miscellaneous waste at this site. The order provided that "the dumping of said refuse and garbage is properly treated under what is known as the landfill system, under the supervision of Dr. F. W. Godwin." Shortly thereafter the city won the case, and consequently the court order was no longer effective. The city, however, agreed to continue operation of the dump in accordance with the intent of the court order, although this action was not mandatory. The dump is not now and apparently never has been operated in accordance with the generally accepted standards of a well-conducted sanitary landfill.



BULLDOZER SPREADING REFUSE AND CONVEYOR-LOADER (IN BACKGROUND) EMPTYING REFUSE; CITY OF CHICAGO REFUSE DISPOSAL SITE, 103D STREET AND LAKE CALUMET

DUMP AT 103D STREET AND LAKE CALUMET Municipal reports refer to this dump as "free," because the city owns the property and consequently does not pay for the privilege of dumping. The site is located on marshland north of Lake Calumet. At the present time the city is disposing of approximately 1,600 cubic yards of refuse per day at this site. Dumpings are made to an average height of 12 feet after the material is leveled by bulldozing, and is then covered with a thin layer of ashes, cinders, earth, or such other inert matter as may be available.

Although the finished fill is fairly well covered, this dump is operated with an excessive amount of exposed face. There is evidence of rat infestation in the vicinity, but it does not appear to be extensive. Fires were observed each time the dump was visited. While this dump is fairly well operated, it is not maintained in accordance with recommended standards of the sanitary landfill method of disposal.

DUMP AT 108TH STREET AND LAKE CALUMET The ground upon which this dump is located belongs to the city and is a portion of the property upon which the 103d Street dump is located. The Illinois Development Company operates the dump. The company's responsibility begins at the loading station, to which the refuse is delivered by municipal collection trucks. After transfer to railroad gondola cars, the refuse is shipped to the disposal site. The loaded cars are placed on a railroad spur approximately 3,000 feet in length which extends parallel to the face of the dump. Between this track and the dump face is a second railroad spur upon which a "clam-shell" operates while unloading the cars. The illustration on page 205 shows that the refuse is piled rather high near the face of the dump. It is later shoved over the edge by means of a bulldozer. During the summer months of 1946 this dump is reported to have been receiving approximately 1,800 cubic yards of mixed refuse per day.

From the sanitation point of view the dump is very poorly operated. Were it not well isolated, nuisance complaints would no doubt result from the condition in which it is maintained. A number of fires have been observed, not only along the open face but also in finished sections of the dump. Although only a few hundred feet of the face of the dump are used for the deposition of material at one time, more than 3,000 feet of open face remain exposed. Flies are numerous, rat infestation is serious, and odors prevail for considerable distances. No effort to provide cover on finished portions of the fill is apparent, and there is evidence of rat infestation. No city should permit a dump of this type to exist.

DUMP AT SACRAMENTO AVENUE AND 28TH STREET This disposal site is located on city property at the House of Correction and is referred to as the "House of Correction Free Dump." The site is an abandoned quarry partially filled with water. Approximately 2,100 cubic yards of refuse are received daily. At the time of observation several feet of material were floating on the surface of the water.

This dump, however, is a well-operated dump of the open type.

Finished portions are adequately covered with cinders, ashes, and other inert material. Few flies were observed, and little odor was detected at this location. There is, however, some evidence of rat infestation.

Considerable gas is generated and appears at various fissures in finished portions of the fill. Oil drums, stones, and other obstructions have been placed over and in certain crevices and the gas ignited. Escaping gas at some fissures has been burning continuously for months. The flames are protected so that no particular fire hazard is created. This method of controlling odors is inexpensive and unique.

The quantities of refuse delivered by the city to each of the four disposal sites which it uses are given in Table 49 for the years 1944 and 1945.

TABLE 49. VOLUME OF REFUSE DELIVERED TO EACH REFUSE DISPOSAL SITE BY THE CITY IN 1944 AND 1945

| <i>Dump Number</i> | <i>Location</i> | CUBIC YARDS REFUSE RECEIVED | |
|------------------------|-------------------------------------|-----------------------------|---------|
| | | 1944 | 1945 |
| 3 | 19th St. and Wolcott Ave. | 172,018 | 144,878 |
| 4 | Wrightwood and Narragansett avenues | 454,075 | 440,954 |
| 5 | 103d St. and Lake Calumet | 192,114 | 418,104 |
| 10 | Sacramento Ave. and 28th St. | 425,822 | 520,539 |

REFUSE DISPOSAL COSTS

Table 50 shows the quantities of refuse received daily and the disposal costs per cubic yard at each dump used by the city, classified by ownership. The contract costs of \$0.195 and \$0.225 at the two privately owned pay dumps are for the privilege of dumping only and include no services by the contractor. The city furnishes all supervision, checking of loads, and labor at the pay dumps, as well as at the municipally owned dumps. The total costs per cubic yard at the municipally owned dumps given in Table 50 do not include fixed charges on real estate.

Cost of disposal represents a major item in the handling of refuse. In 1944 the city disposed of 1,999,015 cubic yards of refuse at a cost of \$588,085.42. The average cost of disposal was in this case \$0.295 per cubic yard. In 1945 the city disposed of 1,708,822 cubic yards of refuse, at a cost of \$585,507.76, or an average cost of about \$0.345 per cubic yard. During the first eight months of 1946, 1,410,737 cubic yards of refuse were disposed of, at a cost of \$399,724.99, or an aver-

age cost of approximately \$0.282 per cubic yard. The \$0.05 increase per cubic yard of 1945 over 1944 is reported to have resulted from increased labor costs and more accurate evaluation of loads. It will be noted that disposal costs have been reduced materially during the eight months of operation in 1946.

TABLE 50. VOLUME OF REFUSE RECEIVED DAILY AT DUMPS USED BY CITY ACCORDING TO OWNERSHIP AND DISPOSAL COST

| <i>Dump Number</i> | <i>Location</i> | <i>Ownership</i> | <i>Average Cubic Yards Received Daily</i> | <i>Contract Cost per Cu. Yd.</i> | <i>Cost per Cu. Yd. of Checking, Supervision and Labor</i> | <i>Total Disposal Cost per Cu. Yd.</i> |
|------------------------|---------------------------------------|------------------|---|--|--|--|
| 3 | 19th St. and Wolcott Ave. | Private | 1,050 | \$0.195 | \$0.126 | \$0.321 |
| 4 | Wrightwood Ave. and Narragansett Ave. | Private | 3,450 | 0.225 | 0.097 | 0.322 |
| 5 | 103d St. and Lake Calumet | Municipal | 1,600 | None | 0.110 | 0.110 |
| 10 | Sacramento Ave. and 28th St. | Municipal | 2,100 | None | 0.106 | 0.106 |

The costs per cubic yard of refuse delivered by the city to loading stations and hauled to disposal sites by rail under contract are presented in Table 46.

In general, costs appear to be high considering the disposal methods employed, primarily because of the high charges made by the owners of disposal sites. In this connection it is reported that the city has paid more than \$1,000,000 in dumping charges at the disposal site at Wrightwood and Narragansett avenues since 1930 and that the cost of dumping at Nineteenth Street and Wolcott Avenue since 1931 has been approximately \$2,000,000.

Between 1940 and 1946 the city has saved \$267,000 by diverting more than two million cubic yards of refuse from pay dumps to municipally owned disposal sites. This achievement is an adequate demonstration of the savings which can be effected when the city acquires additional disposal sites.

PRIVATELY OWNED DISPOSAL SITES NOT USED BY CITY

DUMP AT WEST SIDE DOTY AVENUE AND 118TH STREET This privately owned dump occupies an area of approximately ten acres. It is located on marshland belonging to the Pullman Company. From

twenty to twenty-five private scavengers are said to be disposing of approximately 500 cubic yards of refuse per day at this site, which receives no refuse collected by the city.

One attendant on duty directs the unloading of trucks. One bulldozer is maintained for compacting, leveling, and pushing material over the face of the dump. Dumpings are made to a height of from 6 to 10 feet, after which a small amount of cover consisting of ashes, cinders, or slag is applied.

Flies were numerous, rat infestation was evident, odors were fairly intense, and fires were burning when this disposal site was visited. Reasonable measures of sanitation are not practiced in the operation and maintenance of this dump.

DUMP AT 125TH STREET AND DOTY AVENUE This dump occupies an area of 20 acres on marshland along Doty Avenue. The property is owned by the Pullman Company and is used exclusively by private scavengers. Dumpings of mixed refuse are extended to a height of about 10 feet. Little cover material is used on finished portions of the fill and an unnecessary amount of face is exposed at all times. Flies were numerous and there was evidence of a moderately heavy rat infestation at the time of inspection. A few small fires were burning also on this occasion.

Little attention is given to sanitation in the operation and maintenance of this dump.

DUMP AT AVENUE A AND INDIANA STATE LINE This dump occupies an area of about two hundred acres on privately owned lowland near Wolf Lake. Dumping is permitted for the purpose of land reclamation. Fifteen or twenty private scavengers deliver mixed refuse from Chicago and northern Indiana municipalities, and some waste material is brought in by rail. Dumped refuse is carried to a height of approximately 10 feet. A portion of the exposed face on one side of the area was being covered with foundry sand at the time this site was inspected.

A considerable area of the dump was on fire, and it was stated that these fires burn constantly. There was evidence of a rather heavy rat infestation, and flies were numerous. A number of hogs were wandering about the dump and feeding upon garbage. Smoke was visible from a considerable distance beyond the dump site. There is a residential district not more than one mile distant and several scattered residences and industries within a few hundred yards.

CONTROL OF DUMPS

Of the eight dumps operating in the city only four are maintained in fair condition. Each of these is used and supervised by the city of Chicago.

The other dumps, including the 108th Street dump used by the contractor, were in poor condition when visited. The only supervision noticeable was that essential to the maintenance of conditions which facilitate dumping operations, little attention being given to sanitation, nuisance-causing conditions, or appearance. Inasmuch as these dumps are not used by the city of Chicago, the Department of Streets and Electricity has no responsibility for their operation or maintenance. There are, however, other departments of the municipal government which under existing ordinances do have jurisdiction in the matter of refuse disposal within the city.

Section 99-36 of the municipal code requires that a written permit be obtained from the commissioner of buildings before any person may dump or deposit refuse anywhere in Chicago. This section also requires the applicant to execute a bond with sufficient sureties, approved by the commissioner of buildings, to the city in the penal sum of one thousand dollars on condition that the said applicant will comply with the regulations of the municipal code and the rules and regulations of the commissioner of buildings which pertain to the dumping of refuse. Although the term "refuse" is not used in this section of the code, the substances mentioned are "garbage, ashes, miscellaneous waste, manure, or other substance that may contain disease germs, or be scattered by the wind, or decompose, or become filthy, noxious, or unhealthful." This section states that "such dumping without a permit is hereby declared to be a nuisance." As nearly as can be determined, no dump operator in the city of Chicago has such a permit at this time in effect or has executed a surety bond. If this observation is correct, then each dump constitutes a nuisance according to the municipal code.

Section 99-1 of the municipal code states with regard to nuisances that

it shall be the duty of the Commissioner of Buildings to serve notice in writing, upon the owner, occupant, agent, or person in possession or control of any lot, building, or premises in or upon which any nuisance may be found, or who may be the owner or cause of any such nuisance, requiring him to abate the same in such manner as it shall prescribe, within a reasonable time.

Insofar as the staff of the Chicago-Cook County Health Survey was able to ascertain, the commissioner of buildings has neither issued a permit as required by Section 99-36 for the operation of any dump in Chicago nor, in the absence of a permit, served notice upon any dump operator as required by Section 99-1 of the Municipal Code of Chicago.

Section 167-8 of the municipal code states that "the offensive matters described in Section 167-3 shall under no circumstances be disposed of in any public dump or public place within the City, nor in any manner or place other than as prescribed by the Board of Health." Some of the offensive matters described in Section 167-3 are "table refuse, garbage, ashes, cinders, manure, swill, animal or vegetable refuse, wastes, and fish."

So far as could be determined by this survey, the Board of Health has prescribed no place or manner at which or by which these substances may be deposited. No information has been found to indicate that either the commissioner of buildings or the Board of Health has established rules and regulations pertaining to the dumping of refuse.

COMMENTS

When the large number of sites in the Chicago area suitable for the deposition of mixed refuse is considered, it becomes obvious that disposal by sanitary landfill or by open dump is the most economical method available. Many of these potential disposal sites are now mosquito breeding areas and are infested with rodents. Some consist of pits and quarries which constitute what are often described as attractive nuisances, dangerous to the lives of small children. It was pointed out earlier that the open dump, with a considerable amount of exposed refuse at all times and insufficient cover on finished portions of the fill, has many objectionable features and should not be permitted to exist in the city. It is therefore considered advisable that the city discontinue the practice of open dumping as soon as practicable.

This discontinuance will not preclude future uses and advantages of the many favorable disposal sites available. Few if any changes in collection methods will be required, and no radical changes in methods of disposal will be necessary. The larger disposal sites now in use by the city are suitable for the sanitary landfill method of refuse disposal. Many of the potential sites, some of which are outside the

city limits, also will lend themselves readily to the sanitary landfill operation.

The method of controlled dumping now practiced by the city of Chicago and illustrated on page 205 was discussed earlier. It cannot be denied that compared with the ordinary open dump the city dumps are well operated. In some instances, however, the covering is rather thin, and at times the material used is not particularly suitable for purposes of cover. Consequently, it is not unusual to observe refuse protruding above finished portions of the fill. One of the most objectionable features of all dumps, however, is the extensive open face, which is seldom covered. This lack of cover is one of the differences between the dump, regardless of how well or how poorly controlled, and the sanitary landfill. The exposed face should be completely covered with earth at the end of each day's operation.

This important difference between the open dump and the sanitary landfill cannot be overemphasized. It is indeed unfortunate that the public is almost universally confused regarding these two methods of refuse disposal. Whereas the open dump is undoubtedly the least sanitary method of refuse disposal, the well-operated sanitary landfill meets the highest standards of sanitation. It is, in effect, burial in the earth—one of the oldest methods of waste disposal known to man.

It may be that many of the potential disposal sites in the Chicago area are not in close proximity to earth suitable for the cover material needed in the operation of a sanitary landfill. In such cases careful studies must be made as to the use of inert refuse alone or in combination with soil which in itself may not be entirely satisfactory cover material. In some instances, ashes, cinders, earth from excavations, foundry sand, or slag may be available in quantities which will provide sufficient cover. The city may be required to haul such material to the disposal site. On the other hand, such cover material might be received in sufficient quantities to provide landfill cover if permission were given to deposit it at municipal disposal sites at a nominal cost. Careful consideration must be given to this problem, since the success or failure of the sanitary landfill method of disposal depends upon satisfactory cover of the deposited refuse.

The loading stations, previously described, at which refuse is transferred from city collection trucks to railroad cars for haul to more distant disposal sites, are generally unsatisfactory. The primary reason for this situation is that the contractor evidently cannot justify

the expenditure required to provide a satisfactory type of permanent station when operating under an annual contract. This situation could be corrected by the construction of permanent facilities by the city, which has plans already prepared. These facilities could be either operated by the city or made available for use of the contractor and the contract adjusted accordingly.

The dump at 108th Street and Lake Calumet, operated by the Illinois Development Company on city property, should be properly operated or closed. The operator should be required to level, compact, and cover the existing dump and to use landfill methods. It would be advisable for the city to take over all disposal operations on property now owned by the city in the Calumet Lake area at the earliest possible moment.

It is unfortunate that Chicago has not been able to use the many potential refuse disposal sites available in the area without cost to the city. It has been required to pay excessively high costs for the privilege of disposing of refuse on worthless land. In this connection, it is of interest to note that many cities are not only permitted but often requested by the owners of private property to reclaim waste land by proper filling with municipal refuse.

New York City, for instance, reports that "some of the land reclaimed by the Department through the landfill method is under the jurisdiction of the Park Department and is reclaimed for park purposes. In many cases land is reclaimed by permission of private owners." Seattle, Wash., which also disposes of its refuse by the sanitary landfill method, reports that "the City does not lease any property for fill purposes. Some property is purchased at times, but in most cases permission is given by the owners of low marshy property to the City for filling. Their property is then filled to street grade and is much enhanced in value."

Should the city of Chicago adopt the sanitary landfill method of refuse disposal, which during the period of operation has few of the objections of the dump, it might find itself in a more advantageous position when attempting to acquire disposal sites in the future. It would seem advisable, therefore, that the city, at once institute a program of acquiring potential disposal sites either by negotiation or, if necessary, by condemnation. This program should contemplate future as well as immediate needs. Municipal ownership and operation of all disposal sites used by the city will facilitate planning the future course of the entire refuse disposal program. It also should

enable the city to conduct a more satisfactory operation with little if any additional expense.

The privately owned dumps that are located within the city limits and not used by the city are at present not being controlled and regulated by any municipal authority. Permits for the operation of dumps on private property in the city are said to have been issued at sixty-day intervals by the Chicago Health Department prior to January 30, 1946. This responsibility, authorized by Section 99-36 of the Municipal Code of Chicago was transferred to the Department of Buildings on this date. There is no record that any inspections of refuse disposal sites have been conducted since then or that any permits have been issued for their operation.

While apparently these dumps have never been well controlled and regulated, the present situation with regard to ordinances and divided authority must be held partly responsible. For example: five sections of Chapter 167 of the municipal code, which concerns scavengers, were amended by striking out the words "board of health" and inserting in lieu thereof "commissioner of buildings." No amendment was made, however, of Section 167-8 of the code, which refers to certain offensive matter which shall be disposed of under no circumstances in any public dump or public place within the city or in any manner or place other than as prescribed by the Board of Health. The public as well as the municipal departments involved must be most confused. Observations made during the survey indicated this to be the situation, municipal officials frequently being uninformed regarding responsibilities charged to them by ordinance.

In addition to the division of authority and the confusion resulting from existing ordinances, there is a basic weakness in the code which should be corrected as soon as possible, i.e., the placing of responsibility regarding refuse disposal in a department which normally has little to do with such matters. The building department has neither a physician versed in public health nor a sanitary engineer on its staff. Consequently, it would seem to be greatly handicapped in enforcing ordinances and in promulgating and enforcing regulations intended primarily to protect the public health.

All persons operating private disposal areas should be required to obtain a permit and to post a bond for faithful performance of the terms of the permit. The permit should state in detail the manner in which the disposal area shall be operated, and these details should be those characteristic of a true landfill. Failure to meet the require-

ments should call for immediate revocation of the permit and forfeiture of the bond.

The control over operations of privately operated disposal areas should be placed under the health department, and the immediate supervision put in the hands of a trained and experienced public health engineer.

RECOMMENDATIONS

It is recommended that:

1. The sanitary landfill method of refuse disposal, as described in the report, shall be adopted as soon as feasible at the municipally owned disposal areas, particularly at 103d Street and Lake Calumet and at 108th Street and Lake Calumet.

2. The sanitary landfill method of refuse disposal shall be used at all future sites placed in operation by the city.

3. Additional sites suitable for the sanitary landfill method of disposal shall be acquired by the city.

4. The use of all privately owned pay dumps shall be discontinued by the city as soon as municipally owned sites suitable for sanitary landfill operations can be obtained.

5. The city shall construct and maintain satisfactory types of refuse loading stations.

6. All ordinances relative to the disposal of refuse shall be reviewed and amended, giving to the Board of Health those responsibilities which basically affect public health.

7. All refuse disposal sites in the city, whether privately or municipally owned, shall be operated as sanitary landfills.

REFUSE COLLECTION AND DISPOSAL IN COOK COUNTY

by *Gordon E. McCallum*

A DETAILED DESCRIPTION of the procedures followed by each of the incorporated and unincorporated towns and villages in Cook County with respect to collection and disposal of municipal refuse was beyond the scope of the Chicago-Cook County Health Survey. The investigation was restricted to ascertaining the extent and type of control exercised by the different municipalities over this problem and the methods and procedures currently followed, together with an appraisal of the results from the standpoint of public sanitation. The existing practices described in this chapter are based on field inspection and interviews by representatives of the Chicago-Cook County Health Survey staff and on records made available by municipal authorities.

RESPONSIBILITY FOR REFUSE COLLECTION AND DISPOSAL

All incorporated towns in Illinois have the authority to define and to abate nuisances which operate against public health interests. In addition, the cities are granted the right to levy taxes for establishing and maintaining a system for the collection and disposal of refuse. Municipal control over matters relating to handling and collection of refuse varies in Cook County as to both the extent of regulatory provisions and their enforcement. Where local legislation exists, it usually provides for: (1) control over the handling and storage of refuse on private properties, including the types of containers that may be used and provisions against littering private premises; (2) prohibition against the littering of streets or public areas, and the dumping of refuse in such places or on private properties, unless specifically approved for such purposes; (3) empowering of health, police, or public works officials with authority to prohibit any prac-

tice which may endanger public health, create insanitary conditions, or cause nuisances.

The responsibility for enforcement of these regulatory ordinances and administrative rules is not always clearly defined. Throughout Cook County, enforcement is carried out almost entirely on the basis of complaints received. In municipalities employing health inspectors, all complaints and investigations are handled by these officers, and in the other incorporated towns and villages, by the police or by public works' officials. The Cook County Department of Public Health is the responsible agency for unincorporated areas, but under existing statutes its enforcement powers can be exercised only in conjunction with the office of the state's attorney.

Of the 89 municipalities in Cook County, only 62 make any provision for the regular collection and disposal of refuse. In the remaining 27 towns and villages there is no municipal collection, with the exception of what is referred to as "spring and/or fall clean-up weeks."

In general, even where regulatory ordinances exist, the enforcement is haphazard and inadequate. At the present time the Cook County Department of Public Health has no control over the disposal of refuse in incorporated communities and only limited powers of enforcement in unincorporated areas.

The areas in Cook County under the jurisdiction of the Cook County Department of Public Health include all areas except those with full-time health departments as defined by the Illinois Department of Public Health.

COLLECTION OF REFUSE

The efficiency of a system for the collection of refuse depends upon the co-operation of citizens in providing proper containers for storing refuse before its collection, as well as upon the methods and frequency of the collection service. The general situation in Cook County with respect to each of these three factors is here briefly reviewed. Certain of the quantitative findings are summarized in Tables 51-53.

RECEPTACLES Although many municipalities have specified by ordinance the type of refuse containers to be used, there is wide variation in the purpose and intent of their requirements. In some instances, the only requirement is that the receptacles be rigid; in others that they have handles or be of a certain maximum or mini-

mum size. However, forty-seven communities require that all receptacles be constructed of concrete or metal and that they be provided with tightly fitting covers.

Observations of the field inspectors indicated that compliance with the ordinances, such as they are, is far from satisfactory in the majority of the municipalities.

Conditions similar to those found in Chicago were noted. Such conditions reflect laxity on the part of endorsement authorities and lack of co-operation on the part of householders. No doubt the present attitudes of both the officers and the individual citizens toward this problem have been influenced by the wartime shortages of proper containers.

TYPES OF COLLECTION SERVICE The type of collection service varies with the size of the municipality, the desires of the citizenry, the type and amount of refuse collected, and the method of disposal.

An examination of the prevailing practices in Cook County indicates that in sixty-two of the communities collection services are provided either directly by the municipality or by a municipal contract. The large towns with populations of 10,000 or more furnish this service as a municipal function, whereas the smaller towns vary widely in the type and amount of service they render.

Collection services may include all refuse or be restricted to certain types, such as rubbish and ashes. Forty-two towns, or 47 percent of the incorporated municipalities in Cook County, make no provision for the collection of garbage. In municipalities where only partial service or none at all is provided, the householder is required to contract for private scavenger service or to dispose of his refuse himself. Private scavengers are utilized in the majority of these communities, although the number of families in a particular community availing themselves of this service may be few. In one community only six families were reported to employ private scavengers.

Where no service is provided and private scavengers are not employed, the individual householder disposes of his refuse in one or more of the following ways: by feeding the garbage to domestic fowl or animals, by burning the combustible material in the household furnace or incinerator, by burying the refuse on the premises, by hauling it to a private dump, or by dumping it indiscriminately on private or public property.

A summary of the types of municipal refuse collection in relation to the size of the population served is given in Table 51.

TABLE 51. POPULATION GROUPS IN COOK COUNTY BY TYPE OF MUNICIPAL REFUSE COLLECTION SERVICE

RESPONSIBILITY FOR REFUSE COLLECTION

| MUNICIPAL GROUPS | | | DIRECTLY BY MUNICIPALITY | | BY MUNICIPAL CONTRACT | | FOR ASHES AND RUBBISH ONLY BY MUNICIPALITY | | NO COLLECTION SERVICE BY MUNICIPALITY | |
|------------------|-----------------|---------------------------------|--------------------------|------------------|-----------------------|------------------|--|------------------|---------------------------------------|------------------|
| Group Number | Number in Group | Percent Population ^a | Percentage Municipal | Total Population | Percentage Municipal | Total Population | Percentage Municipal | Total Population | Percentage Municipal | Total Population |
| I | 26 | 2.39 | 2.2 | 0.3 | 2.2 | 0.3 | 7.9 | 0.6 | 16.9 | 1.2 |
| II | 23 | 6.15 | 5.6 | 1.5 | 3.4 | 0.9 | 6.7 | 1.5 | 10.1 | 2.2 |
| III | 23 | 18.23 | 15.7 | 12.7 | 4.5 | 2.5 | 2.2 | 1.2 | 3.4 | 1.9 |
| IV | 12 | 28.49 | 13.5 | 28.5 | ... | ... | ... | ... | ... | ... |
| V | 5 | 44.74 | 5.6 | 44.7 | ... | ... | ... | ... | ... | ... |
| Total | 89 | 100.00 | 42.6 | 87.6 | 10.1 | 3.7 | 16.8 | 3.3 | 30.4 | 5.3 |

^a Total population 606,185.

TABLE 52. POPULATION GROUPS IN COOK COUNTY BY FREQUENCY OF MUNICIPAL REFUSE COLLECTION SERVICE

MUNICIPALITIES IN EACH GROUP RECEIVING SPECIFIED FREQUENCY OF SERVICE

| MUNICIPAL GROUPS | | SEMI-WEEKLY OR OFTENER | | WEEKLY | | BI-WEEKLY | | LESS OFTEN THAN BI-WEEKLY | | NO MUNICIPAL COLLECTION SERVICE | |
|---------------------------|-----------------|------------------------|------------|--------|------------|-----------|------------|---------------------------|------------|---------------------------------|------------|
| Group Number ^a | Number in Group | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage |
| I | 26 | 2 | 2.2 | 3 | 3.4 | 2 | 2.2 | 4 | 4.5 | 15 | 16.9 |
| II | 23 | 0 | 0 | 7 | 7.9 | 2 | 2.2 | 5 | 5.6 | 9 | 10.1 |
| III | 23 | 7 | 7.9 | 11 | 12.3 | 2 | 2.2 | ... | ... | 3 | 3.4 |
| IV | 12 | 3 | 3.4 | 9 | 10.1 | ... | ... | ... | ... | ... | ... |
| V | 5 | 1 | 1.1 | 4 | 4.5 | ... | ... | ... | ... | ... | ... |
| Total | 89 | 13 | 14.6 | 34 | 38.2 | 6 | 6.6 | 9 | 10.1 | 27 | 30.4 |

^a Percent of total population (606,185) in each group is given in Table 51.

FREQUENCY OF COLLECTION It is obvious that the adequacy of a refuse collection service is closely related to the length of the interval between collections. Among the towns in Cook County that provide service directly or by contract, the frequency of collection ranges from twice a week or oftener to less than twice a month. Table 52 shows the frequency with which refuse is collected in the different municipalities in terms of the relative size of the communities.

Statistics in this table indicate that in all the large towns (populations of 10,000 or more) the interval between collections is not longer than one week. In the majority of the incorporated towns, regardless of their size, collections are on a weekly or semi-weekly basis. In fifteen communities, however, the service is as infrequent as twice a month, an indication that in at least 17 percent of the towns in Cook County there is an interval of two or more weeks between refuse collections. In other words, approximately one fourth (24 percent) of the communities that make provision for collections have very infrequent service.

Five of the towns making collections every two weeks or less frequently accept all types of refuse. Individuals in these communities must, therefore, allow the refuse, including garbage to accumulate over a considerable period of time or make additional arrangements for its disposal.

SEPARATION OF REFUSE Table 53 presents an analysis of the refuse separation requirements and practices in the 89 municipalities in Cook County. The table indicates that 27 municipalities provide no municipal refuse service. Of the 62 which maintain either a complete or a partial service, only 19 require no type of separation of the refuse before collection. The extent to which separation is required of the householder among the 43 other municipalities varies considerably throughout the county. Complete separation of garbage, rubbish, and ashes by separate containers is practiced in only five communities.

Each of the 11 municipalities disposing of garbage by incineration required separation of garbage and combustible rubbish. Separation requirements in communities disposing of their refuse to dumps is usually the result of an outmoded collection or disposal method. However, several municipalities requiring separation of ashes only, use this material for repairs to streets and alleys or as cover material at the dump.

COLLECTION VEHICLES The type of collection vehicle used by

TABLE 53. REFUSE SEPARATION PRACTICES BY SIZE OF MUNICIPALITY

| TYPE OF SEPARATION PRACTICED | POPULATION RANGE | | | | | | PERCENTAGE OF 89 MUNICI- PALITIES |
|---|------------------|-------|-----------------|-----------------|-------------------|------------------|--|
| | Total | 0-999 | 1,000- 2,499 | 2,500- 9,999 | 10,000- 24,999 | 25,000 & over | |
| No collection | 27 | 15 | 9 | 3 | 0 | 0 | 30.4 |
| All refuse together | 19 | 3 | 5 | 7 | 3 | 1 | 21.3 |
| Separation required— degree not specified | 8 | 1 | 2 | 2 | 3 | 0 | 9.0 |
| Garbage, rubbish, and ashes separately | 5 | 0 | 0 | 2 | 1 | 2 | 5.6 |
| Garbage, separately—ashes and noncombustible rub- bish together—combust- ible rubbish separately | 1 | 0 | 0 | 1 | 0 | 0 | 1.1 |
| Garbage separately—rub- bish and ashes together | 5 | 0 | 3 | 1 | 1 | 0 | 5.6 |
| Garbage and combustible rubbish together—ashes and noncombustible rub- bish together | 7 | 0 | 0 | 3 | 2 | 2 | 7.9 |
| Rubbish and ashes together —no garbage | 12 | 6 | 4 | 2 | 0 | 0 | 13.5 |
| Garbage and rubbish to- gether—ashes separately | 5 | 1 | 0 | 2 | 2 | 0 | 5.6 |
| All types | 89 | 26 | 23 | 23 | 12 | 5 | 100.0 |

a municipality is dependent upon the local situation and upon numerous factors based on the needs and desires of the particular community. In Cook County the types of vehicles in use range from horse-drawn wagons to modern enclosed conveyor or packer type motor-driven vehicles. The most common type of vehicle in use is the open-dump truck. The capacity of these trucks ranges from 2 to 13 yards, and their carrying loads from 1½ to 4 tons, depending upon the type of refuse hauled. The sides of the truck body are in some cases built up to increase the carrying capacity.

Ten municipalities have one or more modern enclosed conveyor or packer type trucks. These vehicles have a rated capacity of from 8 to 13 cubic yards. Six municipalities utilize semi-trailers or trailers in conjunction with other vehicles. One of these municipalities uses horses to draw the trailers, whereas the remainder use motor-driven cabs (or tractors). The trailers carry loads varying from 3 to 8 cubic yards. All the remaining communities and the private scavengers in Cook County use open-body or dump trucks to collect the refuse and haul it to the disposal site. Municipal officials should give careful consideration to sanitation and economy of operation requirements in the selection of collection equipment.

An improperly constructed and operated refuse-collection vehicle may give rise to odors and nuisances. Often light material such as paper and cartons spill and scatter from the vehicle, particularly if it is an open-body type.

COST OF COLLECTION Many conditions affect the cost to a community of providing refuse collection service. Some of the most obvious of these relate to: (1) frequency of collection; (2) types of refuse collected; (3) place from which collection is made (curb, alley, back door, or basement; (4) length of haul; (5) wage rates of collectors and drivers; (6) population density; (7) methods and operating practices; (8) standard of service demanded by citizens; (9) character of administration and supervision; and (10) accounting and field reporting practices. It is therefore not surprising to find wide variation in the per-capita costs reported by the different municipalities. These costs range from \$.89 to \$2.13 per capita per year for the middle 50 percent of the reporting communities, that is, after excluding communities with the lowest and highest per-capita costs.

Since it was not possible at the time of the survey to obtain comparable figures regarding the cost for similar types of services rendered, no generalizations as to the expenditures for refuse collection in Cook County are warranted.

DISPOSAL OF REFUSE

Three methods of community refuse disposal are commonly practiced in Cook County; hog feeding, incineration, and open dump. Each of these methods has certain advantages and certain inherent disadvantages from the standpoint of public health and sanitation.

HOG FEEDING There are six major farms and numerous smaller ones located in Cook County at which garbage is fed to hogs. Almost all these receive garbage from private scavengers. No municipality owns, operates, or disposes of its garbage directly to a hog farm.

Hog farms are difficult to maintain in a sanitary condition so as to eliminate harborage and food for rodents, breeding places for insects, and the emission of foul odors. The feeding of garbage to hogs may also have a detrimental effect on public health in that the possibility of transmission of trichinosis is increased. Although this possibility may be eliminated by cooking the garbage at 212° F. for 30 minutes before it is fed to the hogs, this procedure is not practiced at any of the hog farms in Cook County. Garbage-fed hogs also have

other diseases which may be transmitted to human beings. Under good inspection service in packing houses, garbage-fed hogs have often been condemned as unfit for human consumption.

Many of these farms feed their hogs garbage collected from Chicago restaurants and stores in the metropolitan area. Five of them have herds ranging from 150 to 6,000 hogs and feed as much as 40 tons per day. Some of the farms are provided with concrete floors and feeding troughs, while others simply dump the garbage on the ground or into wooden troughs.

Although conditions differed on the hog farms visited by field inspectors, none was being operated in a sanitary manner. Flies and rodent infestations were very heavy. In some instances uneaten food and manure were spread and ploughed into the ground. In all cases, however, food had been placed in uncovered piles or dumps for longer or shorter periods of time. Obnoxious odors were noted around many of the feeding areas. Drainage generally was poor.

The Cook County Zoning Ordinance restricts the location of new farms which feed garbage to hogs to I-3 districts (Industry-Unrestricted). However, sanitary control over all hog farms is much needed, although municipal or county ordinances may be required before this control can be brought about.

INCINERATION Nine incinerators are operating in Cook County, located at Des Plaines, Evanston, Forest Park, Glencoe, La Grange, Maywood, Oak Park, Riverside, and Skokie. In addition, the garbage from Mount Prospect and Western Springs is disposed of in incinerators at Des Plaines and La Grange, respectively. There is also an incinerator at Wilmette, which is not in operation at the present time. Several of these incinerators are located relatively close to the densely populated portion of the municipality, others are in the remote limits. The Cook County Zoning Ordinance, recognizing that incinerators can be operated satisfactorily, allows their construction in I-1 districts (Industry-Light). However, an improperly designed or operated incinerator can and will cause a nuisance.

The comparative cost of incineration is difficult to obtain because of differences in accounting procedures, methods of operation, the age of the plant, and other factors.

The total operating costs should include: (1) interest and amortization; (2) labor; (3) auxiliary fuel; (4) electric power received for operation; (5) repairs and replacements; and (6) water. Although

costs ranging from \$1.38 to \$4.80 per ton were reported, it is obvious that unless all the factors involved are included for each municipality, these figures should be used only as rough indices.

OPEN DUMPS Except for municipalities utilizing incinerators and those making no provision for municipal collection, all municipal refuse is disposed of in open dumps. There are forty large open dump in Cook County. These range from the small dump in towns which allow no garbage to be dumped to the large privately operated dumps accepting all refuse from a number of municipalities. Various degrees of supervision and methods of operation are practiced. Some dumps are owned and operated by the municipality, and except for original cost they entail no expense; others, by private individuals or firms that do not charge for dumping. Many private firms, however, do charge a municipality for the privilege of dumping refuse.

The method of payment varies considerably. A few municipalities pay a set sum as rental per year; in one case, Evanston, possession of the property is acquired at the end of ten years. Other dumps charge anywhere from \$.25 to \$1.50 per load, still others charge on a weight or volume basis. One large dump receiving refuse from nine cities charges \$.50 per ton.

The objections to open dumps have been pointed out in the previous chapter and need not be repeated here. The economy of this method, which has been one of the principal points in its favor, does not apply in many of the communities in Cook County, because owners of the property used as dumps make such high charges. The gradual urbanization of the rural areas in Cook County is also making it increasingly difficult for municipalities to find acceptable dumping areas within a reasonable distance for hauling. The zoning ordinance in Cook County restricts the location of new dumps to I-3 districts (Industry-Unrestricted).

SANITARY CONDITIONS The sanitary conditions noted at most of the dumps visited were extremely poor, similar to or worse than the open dumps used by Chicago.

It is obvious that the urbanization of the county area has forced many municipalities to extend the length of their hauls beyond economic limits in order to reach some of the large privately owned dumps. Use of these large private dumps, however, which are mainly abandoned quarries and clay holes, releases the municipality from the necessity of providing supervision over the dumps. The material is also removed far enough away from the particular municipality to

eliminate nuisance therein, even though a nuisance may be caused to those individuals residing in the vicinity of the dump.

The sanitary landfill method is not practiced in Cook County, although many areas now being used as dumps would lend themselves readily to this method.

COMMENTS

Existing legislation gives all communities in Cook County, regardless of size, the authority to establish such local control requirements as they see fit for the collection and disposal of municipal wastes. The manner in which this service is controlled varies with the communities. Where the citizens demand good service and co-operate with the authorities, a reasonably high standard is attained. There is no standardization of ordinances.

Educational activities to inform the householder of his responsibility are generally poor, although some communities distribute hand bills and kitchen cards urging compliance with municipal ordinances.

The enforcement of existing ordinances is generally lax. Adequate inspection forces are not provided, and the responsibility for inspection and enforcement is clearly defined in few instances.

Proper receptacles for storage of refuse are rarely provided. As a result the cost of collection is increased and sanitary problems are created. Collection vehicles are, in the main, open-body trucks which neither meet sanitary requirements nor provide economy of operation. The frequency of collection varies from several times per week during the summer to periods up to several months. The poor sanitary conditions observed were oftentimes due to the infrequent collection schedules.

Administrative personnel are generally untrained and inexperienced in modern methods of refuse collection and disposal. Jobs with the refuse collection and disposal department are often distributed on the basis of political patronage.

There is no regulation or supervision of dumps and hog farms located in the county. Conditions noted at most of these places were deplorable.

The practice of disposing of municipal wastes at dumps, particularly so-called "pay dumps" located in communities other than the one in which the wastes originate, is common throughout the county. Apparently no attention is paid to the state law which prohibits one

city, village, or incorporated town from disposing of its garbage within the corporate limits, or within a mile, of another community. This law can be made the basis for better control over disposal of municipal waste throughout the county area, including Chicago.

The Cook County Department of Public Health has, at present, no control over the disposal of wastes within incorporated communities and only limited power where disposal sites are in unincorporated areas.

RECOMMENDATIONS (COOK COUNTY EXCLUSIVE OF CHICAGO)

It is recommended that:

1. The Board of Commissioners of Cook County shall adopt an ordinance governing the storage, transportation, and disposal of refuse containing garbage or other offensive material for the area under its jurisdiction.

2. The Cook County Department of Public Health shall be the agency empowered to enforce the above ordinance.

3. Such ordinance shall include the following pertinent items:

- (a) The use of suitable containers for the storage of garbage on private properties prior to collection.

- (b) The use of the sanitary landfill method in the operation of refuse disposal sites.

- (c) The requirement that the owners or operators of farms feeding garbage to hogs meet sanitary requirements in the operation of this business, including the cooking of garbage at 212° Fahrenheit for thirty minutes prior to use.

- (d) The requirement that the owners or operators of land used for the disposal of refuse containing garbage obtain a permit for such operation from the Cook County Department of Public Health.

- (e) The requirement that the owners or operators of any farm feeding garbage to hogs obtain a permit for such operation from the Cook County Department of Public Health.

- (f) The requirement that persons desiring to enter into the operation described in (c) and (d) first obtain a permit from the Cook County Department of Public Health.

- (g) The requirement that properly constructed vehicles be used for the transportation of refuse containing garbage from the point of collection to the point of ultimate disposal.

4. Municipalities not within the jurisdiction of the Cook County

Department of Public Health shall utilize the sanitary landfill method for the disposal of refuse containing garbage or other offensive material.

5. The Cook County Department of Public Health shall submit periodic reports to the officials in the municipalities under its jurisdiction with reference to the adequacy of refuse collection methods utilized by such municipalities.

MILK AND MILK PRODUCTS

by *Ralph E. Tarbett*

IN GENERAL, control over foods is grouped in one division of a health department. Four activities are covered: (1) the production, processing, and delivery of fluid milk and milk products; (2) the preparation and processing of frozen desserts; (3) sanitation of eating and drinking places where food or drink is stored, prepared, and served; and (4) the inspection and examination of foods to determine their suitability for human consumption.

Control over milk and milk products requires (1) constant inspection of dairy farms, receiving stations, and vehicles and containers used in transporting milk; and (2) supervision over pasteurization plants and the methods and vehicles used in the final delivery. In addition to these inspection services, laboratory tests must be made to determine: (1) the food quality of the milk, (2) its bacterial content, (3) its cleanliness, and (4) the completeness of pasteurization (determined by the phosphatase test). Other laboratory tests may also be necessary. Milk and milk products include milk, cream, butter-milk, chocolate milk, and other combinations of fluid milk.

Control of frozen desserts requires much the same procedures as those used in the testing of milk, since milk and cream are generally constituent parts of frozen desserts. Control over this food is generally combined with the milk control activities.

Control of eating and drinking places requires the inspection of restaurants, soda fountains, taverns, and similar places to determine conditions under which the food or drink is stored, prepared, and served. Inspection includes methods of cleaning, bactericidal treatment, and the storage and handling of all utensils used. Here again laboratory services are necessary to determine the efficiency of the cleansing processes used and bactericidal treatment of utensils and equipment routinely undertaken.

The fourth phase of the food inspection service applies to the

gross physical evidences of wholesomeness or spoilage in foods displayed or in reserve for sale. It includes also the antemortem and postmortem inspection of meats at slaughterhouses not inspected by the United States Government.

Throughout many years of study in co-operation with health agencies and industries, the U. S. Public Health Service has developed recommended ordinances and codes covering the sanitary control of milk, frozen desserts, and eating and drinking establishments. These recommendations have become recognized generally as standards and have been adopted by many state and local health agencies. Instructions and guides for inspection have been prepared by means of which the effectiveness of control administration and field activities may be determined, and efficiency expressed in terms of numbers or percentages. The various items of sanitation have been weighted arbitrarily in accordance with their importance or significance in assuring the safety and the quality of the product which reaches the consumers. The results of such surveys and computations are termed "sanitation ratings." Under this rating scheme a score of 90 is considered acceptable. Ratings of less than 90 indicate lack of reasonably efficient control.

In rating the efficiency of sanitary control over food handling establishments in Chicago and Cook County the *Standard Ordinances and Score Forms* developed by the U. S. Public Health Service have been used as the guide. No attempt has been made to determine the efficiency of control based on existing ordinances where these differ materially from the standards. The ratings cited in the report, therefore, correspond with the standards generally accepted rather than with the requirements set forth in local ordinances.

Each of the four activities under food control will be discussed separately.

Milk is one of the most important foods in the American diet. It is likewise an excellent food for bacteria, most of which are harmless. Some bacteria, however, cause dangerous diseases in human beings. Activities designed to protect the health of milk consumers by reduction to a minimum of all possible contamination with disease-producing organisms is, therefore, a major duty of a health department.

With continual and proper enforcement of the recognized requirements, the public health hazards of the milk supply can be reduced to the minimum. Without such controls, the milk supply becomes a definite and always present danger to health.

Diseases transmitted through milk fall into two classes, (1) those diseases transmitted directly from the cow and (2) those due to contamination introduced into the milk by faulty sanitation. In the first group are tuberculosis, undulant fever, and infections due to pus-forming germs. In the second group are typhoid fever, diphtheria, scarlet fever, septic sore throat, enteritis, and diarrhea. In 1944 there were forty-one milk-borne disease outbreaks, with 1,449 cases in the United States.

While efficient pasteurization destroys the germs which may cause disease, it is not wise to place complete reliance upon this method of processing. Additional factors of safety are necessary to make certain that the milk is produced from cows free of disease and that it is so handled that no contamination can take place from the time it is drawn from the cow until it is delivered to the consumer.

The milk supplies for large metropolitan areas require many dairies, receiving stations, and pasteurization plants, often located at considerable distance from the area served. The area from which the milk for a city is derived is known as the milk shed for that city.

SANITATION OF MILK SUPPLIES IN CHICAGO

The Chicago Health Department has for a long time taken an active interest in the production of safe milk for its citizenry. During 1926-1928 some of the first experiments and studies on the efficiency of pasteurization were carried on here, in co-operation with the United States Public Health Service. At present milk permitted to be sold in the city must be Grade A Pasteurized Milk and Pasteurized Certified Milk as defined by the Ordinance and Code recommended by the United States Public Health Service.

Before discussing the control maintained over the milk and milk products sold within the city of Chicago, it may be desirable to consider some of the problems involved in carrying on the control program.

The milk shed for the city of Chicago covers ninety counties in four states. The 16,090 producing farms are located as follows: Illinois, 26 counties, 5,663 farms; Indiana, 22 counties, 1,282 farms; Michigan, 4 counties, 369 farms; Wisconsin, 38 counties, 8,776 farms. For the year ending August 31, 1946, these farms produced a total of approximately $2\frac{1}{2}$ billion pounds of milk under inspection by the Chicago Health Department.

From these 16,090 dairies or producing farms, of which 255 are lo-

cated in Cook County, milk is brought to receiving stations and from there shipped by tank trucks or tank cars to the pasteurizing plants located in or near the city.

The 105 receiving stations are located in the following states: Illinois, 30; Indiana, 9; Michigan, 3; Wisconsin, 63.

These stations are operated by 67 different companies or agencies. Milk and cream from these 16,090 dairy farms is channeled to 88 pasteurizing plants for final processing. This number does not include plants which handle frozen desserts only. These 88 plants operated by 83 different companies pasteurize daily an average of 432,732 gallons of fluid milk and 58,270 gallons of milk products (cream, buttermilk, chocolate milk, and other items). At these pasteurizing plants the milk is bottled or placed in single service containers for delivery to the consumer. All except three of the pasteurizing plants sell milk on a retail basis. Milk obtained from these pasteurizing plants is also distributed by 405 independent concerns. In 1945, 2,902 vehicles were engaged in home delivery of milk and 9,856 stores also handled milk.

In addition to the pasteurizing plants handling milk and milk products there were 19 plants pasteurizing ice cream mix for sale to counter ice cream freezers or to plants manufacturing ice cream.

The Chicago Milk Ordinance is based on the Ordinance and Code recommended by the U. S. Public Health Service in 1934 and has not been modified to include all the amendments in the 1939 revision: These amendments apply almost entirely to pasteurization plants. The Chicago Health Department has met this situation by enforcing the Illinois statute (Grade A Pasteurization Plant Law) which includes the 1939 amendments of the Public Health Service.

Only Grade A and certified pasteurized milk products are permitted to be sold to the public in the city. A small amount of raw certified milk, about 75 quarts per day, is sold on physicians' prescriptions, but copies of such prescriptions must be filed with the health department. Some pasteurized milk not meeting Grade A requirements finds its way into the city through purchase by individuals from dealers outside and adjacent to the city. Control over this milk is a problem for the county.

ORGANIZATION OF SECTIONS The sanitary control over the milk supply is under the Dairy Division of the Chicago Health Department and is divided into the Country Dairy Inspection and the City Dairy Inspection Sections.

Country Dairy Inspection Section.—This section is responsible for all inspections of producing farms, receiving stations, shipping facilities, including truck tanks and railway tanks, and other factors that may influence the quality of the milk before it reaches the pasteurizing plants.

In addition to the director, the personnel of the section includes 3 supervisors, 33 inspectors of dairies and tank trucks, 3 inspectors of receiving stations, 4 sample collectors, and 1 vehicle inspector.

The total number of farm inspections in 1945, including reinspections following issuance of notices or revocation of permits, was 57,253, or an average of approximately 3.5 inspections per farm per year.

The Dairy Farm Inspection Report and the Plant Inspection Report used are those recommended by the U. S. Public Health Service.

During 1945, there were 98 country milk receiving stations in operation, and inspections totaled 567, or an average of 5.8 inspections per station for that year. The cost of all field work by the Country Dairy Inspection Section was \$249,660 in 1945.

In September, 1945, a check of a representative sample (238 producing farms) by the United States Public Health Service and the Illinois Department of Public Health gave a rating of 88.61.

Physical examinations of cattle are carried on by the authorities of the states and counties in which they are located. The interval between tests depends upon whether or not the county is a modified accredited tuberculosis-free area and varies from one to three to one to six years.

City Dairy Inspection Section.—The City Dairy Inspection Section maintains control over all city and near-by pasteurizing plants, city receiving stations, ice cream, butter, and cheese factories.

In addition to the director, the section employs 3 supervisors, 11 plant inspectors, and 2 inspectors who collect samples of pasteurized milk and milk products and also inspect distribution vehicles.

During 1945, 5,571 inspections were made of 90 pasteurizing plants, or an average of 61 inspections per plant per year. There were 5,202 vehicle inspections made: 2,902 initial inspections to determine compliance with the ordinance before issuance of a license, and 2,300 reinspections. The cost of this activity in 1945 was \$55,571.00, exclusive of central office expenses. The survey made by the U. S. Public Health Service and Illinois State Department of Public Health in September, 1945, also included 33 milk-receiving stations

and 36 pasteurization plants, exclusive of frozen dessert plants. A rating of 93.64 percent was given to these stations and plants.

City and Country Rating Combined.—The combined rating of milk control, as determined by the survey made in September, 1945, including production and pasteurization, was 91 percent, out of a possible 100.

LABORATORY CONTROL The Bureau of Laboratories and the inspectors in the field are responsible for this service. Water samples are examined in the Chicago Health Department laboratory or by the state department of health of the state in which the source is located. One bacteriologist, one chemist, three laboratory assistants, and one laborer from the laboratory staff of the Chicago Health Department are assigned to milk control. Personnel of the Country Dairy Inspection Section conducted 125,506 reduction tests and 8,004 sediment tests at receiving stations during 1945.

The following examinations were made in the Chicago Health Department laboratory during 1945: reduction tests, 4,827; sediment tests, 1,700; bacterial examinations of milk and milk products, 12,726; bacterial examinations of ice cream, 1,426; chemical tests of milk and milk products, 5,298 phosphatase tests of milk and milk products (test for efficiency of pasteurization), 2,850; bacterial examination of water (all laboratories), 513.

A check of laboratory equipment and methods by the U. S. Public Health Service determined that procedures employed conformed to the *Methods for Examination of Dairy Products*. The cost of laboratory service during 1945, exclusive of the work conducted in the field, was \$18,000.

Laboratory Control by Distributors.—In order to keep informed currently as to the sanitary quality of their milk, some distributors not only have laboratory services for the determination of butter fat content but also make reduction tests, other bacteriological examinations, and phosphatase tests to determine adequacy of pasteurization. Ten of the larger plants maintain laboratories of their own, while others employ the services of private laboratories. These laboratories follow the *Standard Methods of Milk Examination of the American Public Health Association*.

COST OF INSPECTION The total annual cost of maintaining the milk and frozen dessert control during 1945 was \$373,498, broken down as follows: country field service, \$249,660; city field service, \$55,571; laboratory, \$18,000; administration and overhead, \$50,261.

COMMUNICABLE DISEASE CONTROL All producers or distributors of milk or milk products are required to report immediately any case of illness or any infectious, contagious, or communicable diseases occurring on their farms or among the employees in their plants. On receipt of such notice, the milk is excluded immediately and its sale prohibited until the quarantine period fixed by the Illinois Department of Public Health has elapsed and the local health officer has certified that contagion no longer exists.

No routine medical examination of milk handlers is required. If suspicion arises, however, as to the probability of transmission of infection by a milk handler, the Chicago Health Department is authorized to require his immediate exclusion from milk handling. The department further requires an adequate medical and laboratory examination of the suspected person and of his associates.

Presentation of a medical history to the Chicago Health Department is required before employment for each person handling milk in pasteurizing plants and receiving stations. If the history is unsatisfactory, employment is delayed. If the history discloses previous illness from typhoid fever, then three specimens of feces and urine for laboratory examination are required to satisfy the department that the individual is not a typhoid carrier.

No communicable disease epidemic has been traced to the Chicago milk supply since 1935.

QUALIFICATIONS OF PERSONNEL The chief of the Dairy Division holds the degrees of B.S., M.D.V. (Veterinary), and M.D. He has been with the department continuously since 1912, principally in the laboratory, being chief of the Bureau of Laboratories from 1932 to 1945. At that time he was transferred from the position of laboratory director to that of chief sanitary officer. His present status is temporary.

Country milk inspection is under the direction of a graduate engineer with postgraduate instruction in public health. He has been in charge of this division of the work since his appointment through civil service in 1940. Before his employment by this city he was for twenty-one years employed in the health department of one of the southern states as director of its bureau of inspection. He has been intimately connected with the development of the U. S. Public Health Service's program for milk control since its inception in 1923. Until recently he has been a member of the Advisory Milk Committee of the U. S. Public Health Service. He is a member of

the Milk Standard Methods Committee of the American Public Health Association and chairman of the Committee on Sanitary Procedure of the International Association of Milk Sanitarians.

The director of city milk inspection has been with the health department since 1913, serving until 1938 as food inspector. He was transferred to the milk section in 1939, and in 1943 was made director of the city section. His status in his present position is temporary, although he retains permanent civil service status as an inspector. His training has been entirely on the job. He does not have a professional degree.

Five of the six supervisors hold temporary appointments not made on the basis of their qualifications for the position. Evidence from various sources leads to the conclusion that little value is derived from the services of these supervisors. An added load is thus thrown on the section chiefs.

The age of inspectors ranges from 28 to 74 years, with both the average and the median at 50 years. Half of the inspectors are 50 years or more, and 13 have passed 60. Fifty-two of the 61 inspectors have permanent status under civil service and have been in the service of the city for a considerable number of years—17 for more than 20 years, and only 10 for less than 5 years.

When first employed, inspectors are trained for the duties to be performed by working with the more experienced men. They are not, however, subject to physical examinations later, or to other examinations which would determine their fitness and ability to carry on their duties properly.

COMMENTS AND CONCLUSIONS

The "sanitation ratings" developed by the U. S. Public Health Service were discussed at the beginning of this chapter. It was pointed out that ratings of less than 90 indicate lack of reasonably efficient control. The check survey of the milk supply made in September, 1945, by the U. S. Public Health Service and the Illinois Department of Public Health provided the following percentage ratings of Chicago milk: raw milk sold to plants, 88.61 percent; pasteurization plants including receiving stations, 93.64 percent; pasteurized milk as delivered, 91.12 percent; enforcement methods, 98.15 percent.

While the supply as a whole received a rating above 90 percent and the general milk ordinance enforcement program of the Chicago Health Department was stated to be good, nevertheless the rating

for the producing dairies fell below 90 percent. The survey report indicated that sanitary conditions on milk producing farms had retrogressed since the previous survey in 1943. In general, procedures affecting cleanliness gave evidence of decreased efficiency in inspection.

The findings of this survey indicate need for: (1) a properly conducted inservice training for new employees. Placing new employees in the hands of older employees for training usually results in a reflection in the new employee of the shortcomings, if any, of the older man, unless the new employee is sufficiently grounded professionally to ensure proper evaluation of the instruction; (2) inservice training for inspectors carried on at regular intervals in order to attain uniformity of ordinance interpretations by inspectors and correction of faults in inspection procedure; (3) better supervision in the field by competent personnel to ensure adequate and proper inspection; (4) careful review of the qualifications of new employees before appointment; (5) replacement of inspectors found to be incompetent or physically unable to carry on their duties properly; and (6) providing milk producers with information on proper control of defective conditions.

Selection of nontechnically trained personnel and the need for inservice training for all positions in the health department are discussed further in Chapter 42.

The Chicago milk shed includes parts of all of the milk sheds of other cities. While this situation does not cause duplication in the inspection of dairies it does bring about duplication of effort in any given area. If milk ordinances were standardized, reciprocal arrangements for inspections might be made with consequent saving in cost to all concerned. Unfortunately, the "standard ordinance" is not in force throughout the entire area covered by the milk shed. In Illinois it is enforced by the state which exercises control over dairies producing Grade A milk. Many Illinois cities also enforce the "standard ordinance." All interested agencies should consider a plan which would make possible co-ordination of the inspection work within the milk shed and reduction of duplication.

While Chicago's rating of 91 percent indicates that the control exercised by the Board of Health over the city milk supply is good, evidence exists of some inefficiency in the inspection service which should be remedied. Greater attention should be given to the em-

ployment of competent supervisors and inspectors through more careful selection and by inservice training. The city ordinance, which is based on the 1934 edition of the U. S. Public Health Service Ordinance should be brought up to date with the latest revision.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. The present milk ordinance be revised in accordance with the latest recommended edition of the standard Milk Ordinance and Code of the U. S. Public Health Service.
2. An inservice training program under competent instructors be instituted and all inspectors be required to take the course.
3. New employees be required to complete the inservice training program and pass the necessary examinations before being placed on duty. Failure to pass should be cause for dismissal.
4. The efficiency of performance of supervisors and inspectors be reviewed and such changes made as the records would indicate.
5. Inspectors be required to make sufficient inspections of farms at times of milking to determine compliance with the sections of the ordinance covering milking.
6. Through co-operative arrangements with the Cook County Department of Public Health and the cities and villages in Cook County enforcing their own milk control programs, the inservice training program be made available to milk inspectors employed by these agencies.
7. In co-operation with the Cook County Department of Public Health arrangements be made for a training program for employees of the dairy industry within the Chicago and Cook County milk shed.
8. The inspection staff be increased in accordance with the recommendation in Chapter 42.

MILK SUPPLIES IN COOK COUNTY EXCLUSIVE OF CHICAGO

There is no unified sanitary control over the quality of milk and milk products sold in the county outside Chicago. Evanston, certain North Shore municipalities, Oak Park, and La Grange maintain their own control over supplies not controlled by Chicago or by each other. Cicero and Berwyn each exercise some control. The Illinois Department of Public Health exercises control over all farms purporting to produce Grade A milk and all pasteurizing plants not

under control of Chicago or of the first three communities mentioned above. Such supervision as exists over dairy farms supplying ungraded milk is under the State Department of Agriculture.

It should be borne in mind that Chicago distributors sell 93 per cent of the Grade A pasteurized milk and milk products sold in the county area outside Chicago which thus come under Chicago control. Ratings for pasteurized milk given in communities exercising no control except that supplied by the state are undoubtedly higher for this reason than they would be otherwise.

An ordinance recently adopted by the Board of Commissioners of Cook County requires pasteurization of all milk and milk products sold in the county, except frozen desserts. No grading was specified in the ordinance, hence all milk cannot be classified as Grade A. With the passage of this ordinance the Cook County Department of Public Health becomes the responsible enforcing agency.

EVANSTON A survey of the Evanston milk supply was made in October 1945 by the U. S. Public Health Service and the Illinois Department of Public Health. At that time the total amount of milk sold daily was 7,351 gallons. Of this amount, 1,674 gallons was produced, pasteurized, and delivered under local supervision. The remaining 77 percent came under the supervision of Chicago, the North Shore municipalities, or Waukegan. All these communities were surveyed also during this period.¹

Although Evanston is not operating under the Standard Milk Ordinance and Code recommended by the U. S. Public Health Service, ratings based upon this code were used in evaluating the milk supply.

Milk control is under the health department. Two inspectors devote a part of their time to the work. Milk examinations are made in the health department laboratory. Thirty-five dairy farms and three pasteurization plants are under the direct control of the health department. All milk is pasteurized. The control work during 1945 consisted of 628 farm inspections and 44 pasteurization plant inspections.

Laboratory examinations made by the survey staff were limited to plate counts of bacteria on 588 samples of pasteurized milk and 905 samples of milk before pasteurization. Rather poor ratings were

¹ The findings of recent U.S.P.H.S. surveys of the milk supplies of Evanston, the North Shore municipalities, and Oak Park were accepted by the Chicago-Cook County Health Survey and used in judging conditions in these communities.

obtained for milk from the dairies and plants over which Evanston exercises control. Based on the amount of milk handled, the final rating for raw milk from these dairies was 75.01 percent and for the pasteurizing plants, 73.13 percent. The weighted rating for all milk sold in the city was 86.74 percent. This higher over-all rating was due to the fact that 77 percent of the milk sold in Evanston comes from producers whose milk supply is under the supervision of agencies which maintain a more efficient control.

The three pasteurizing plants operating under city control label their milk and milk products Grade A, yet no regulation permits such labeling. The Grade A label on a milk container indicates that the milk has been produced under the conditions specified in the ordinance for such grade. If no specifications are stated and no grading is required by the ordinance, no grade should be shown on the label. Since 77 percent of the milk sold in Evanston is produced under the control of agencies which do require labeling according to grade, the reason for the use of a Grade A label by local producers is, of course, obvious.

To meet the standards set by the state, by Chicago, and by other communities in Cook County, it would be advisable for Evanston to adopt the standard ordinance and limit the sale of milk to Grade A pasteurized. If such an ordinance were adopted, both the inspection force and the laboratory staff would need training in the application of the control measures specified in the ordinance.

NORTH SHORE MUNICIPALITIES Through a co-operative arrangement with the Winnetka Health Department, a milk control service for enforcement of their respective ordinances is maintained by Glencoe, Highland Park, Kenilworth, Lake Bluff, Lake Forest, Skokie, and Winnetka. These communities all operate under the standard ordinance.

A survey of the control activities carried on by this group of communities was made by the United States Public Health Service and by the Illinois Department of Public Health in October, 1945, and the control was rated in accordance with the standard ordinance.

At that time 302 dairy farms and 8 pasteurization plants under supervision were supplying about 70 percent of the milk distributed. The remainder was supplied from sources under the control of Chicago, Evanston, Oak Park, and Elgin authorities. Milk control in all these cities was surveyed during the same time period.

The Winnetka Health Department provides a sanitary engineer

and an inspector for the inspection and control work, and all laboratory work is performed in the department's laboratory.

During 1945, 172 pasteurizing-plant and 1,192 dairy-farm inspections were made. Milk tests at the plants totaled 141 and in the laboratory, 549. As a result of this survey, the rating given for dairy farms was 86.63 percent; for pasteurizing plants, 91.31 percent; and for the pasteurized milk under direct control, 88.96 percent. These ratings are lower than the rating considered indicative of satisfactory control. The enforcement rating was 84.5 percent, which also is lower than the accepted standard of 90 percent. The rating based on the control exercised over all milk sold in these North Shore Municipalities was 87.6 percent.

Another survey of milk control in the North Shore municipalities was made in September, 1946, by the Illinois Department of Public Health. The findings of this survey indicated very satisfactory progress in the control of milk sanitation. All milk produced under the direct supervision of the Winnetka Health Department was given a rating of 92.7 percent.

OAK PARK A survey of the milk sanitation of this community, covering both Oak Park and La Grange, was made by the Illinois Department of Public Health in February, 1946. The survey was conducted in accordance with the procedure recommended by the U. S. Public Health Service. Approximately 40 percent of the milk sold in these communities comes under local control. The remainder comes from supplies under the control of Elgin, Chicago, and the North Shore municipalities, which were all surveyed.

Control is under the health department of Oak Park, which operates under the standard milk ordinance. The milk sanitarian of the health department is in charge, and milk tests are made in the health department laboratory. Four hundred inspections were made of dairies, and 120 of pasteurization plants. Milk samples tested in 1945 numbered 706.

A small amount of certified milk is sold in this area, but with this exception all milk sold is Grade A pasteurized. The ratings for producing dairies and pasteurization plants under the control of the Oak Park Health Department were 86.9 percent and 89.7 percent, respectively; for the pasteurized milk supply, 88.3 percent; and for enforcement, 89.0. The rating for the entire supply of the two cities was 89.6 percent. The over-all rate was higher than the rate found for the local supply alone, because more than 50 percent of the milk

supply in Oak Park and La Grange comes from plants under Chicago Health Department control. While the ratings did not quite measure up to standard, they came very close to it.

Cleanliness and bactericidal treatment of utensils at dairy farms needed improvement, and one small pasteurizing plant was in poor condition.

CICERO This city adopted the Standard Milk Ordinance and Code of the U. S. Public Health Service in 1942, and control activities are under its health department. The laboratory work is performed by a commercial laboratory. The city has two inspectors who devote part of their time to milk inspection work. Grade A pasteurized milk sold in this city is also under control of the Illinois Department of Public Health.

BERWYN Berwyn, like Cicero, carries on milk control although this supply as in Cicero comes under state control for Grade A pasteurized. The Ordinance and Code of the U. S. Public Health Service was adopted in 1937. One inspector spends a portion of his time on milk inspection. Ninety-four samples of milk and ninety-three of cream were tested in the health department laboratory.

Cicero and Berwyn both require that milk offered for sale be of Grade A quality. In neither city were records available as to inspections, rating of supply, or other information tending to indicate compliance with the ordinance or to show the extent of control exercised. As in other communities, the Illinois Department of Public Health includes inspection of the milk supply for these two cities in its activities.

OTHER CITIES As far as could be ascertained, no other cities or villages in Cook County except those listed above exercise effective control over their milk supplies.

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH At the present time the county health department exercises no control over milk produced or processed in the county. In May, 1946, the county commissioners adopted a pasteurization ordinance requiring pasteurization of all fluid milk and milk products. The ordinance does not apply to frozen desserts. Grading is not required, nor are any bacteriological limits set for milk before or after pasteurization.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH Control over the production and pasteurization of milk sold and distributed, under the Grade A label in all parts of the county, except Chicago, Evanston, the North Shore municipalities, Oak Park, and La Grange, is a

function of the Illinois Department of Public Health. The service is operated through the Chicago District Office. The laboratory examinations are made in the Chicago Branch Laboratories. The district office operates in Cook, Lake, McHenry, Boone, De Kalb, Kane, Du Page, Grundy, Kendall, and Kankakee counties. The staff consists of two milk sanitarians employed under state civil service. Both are men trained professionally in milk sanitation.

All producing dairy farms in Cook County operating under the supervision of the Illinois Department of Public Health are inspected at least five times annually, and all pasteurization plants at least three times annually.

The Illinois Department of Public Health exercises no control over farms producing ungraded milk, but does inspect pasteurization plants processing this milk. It does not conduct bacterial examinations of milk from these plants, since there are no state standards for ungraded milk. Phosphatase tests are made, however, as a check on the efficiency of pasteurization.

Representatives of the Illinois Department of Public Health made a milk sanitation survey of the milk supply for Cook County for the Chicago-Cook County Health Survey during the period July 1 to 15, 1946. This survey included an investigation of all milk supplies sold and distributed in the county regardless of grading. In each group, graded and ungraded, a representative number of dairy farms were inspected, as well as all the pasteurization plants.

The survey did not cover Chicago, the North Shore municipalities, Evanston, and Oak Park, since reports for them were already available.

GRADE A PASTEURIZED MILK The Grade A pasteurization plants and the farms producing milk for these plants are under the direct supervision of the Illinois Department of Public Health. Routine inspections of both plants and farms are made by personnel of that department. Bacteriological and phosphatase examinations of samples of milk and cream are made in the department's laboratories. The inspections and laboratory examinations adopted by the department for administration and enforcement are identical with the requirements contained in the Milk Ordinance and Code recommended by the U. S. Public Health Service in its latest (1939) edition.

The eleven pasteurization plants selling Grade A milk in the county all operate under the supervision of the Illinois Department of Public Health. These plants obtain their raw-milk supply from 121

dairy farms. The inspection records kept by the department for each of the pasteurization plants and for thirty-four of the dairy farms, selected at random, were reviewed, and sanitation ratings were compiled, based on the requirements given in the U.S.P.H.S. code. The extent to which these requirements were met is indicated by the following "compliance ratings":² dairy farms, 87.59 percent; pasteurization plants, 84.72 percent; pasteurized milk, 86.16.

UNGRADED PASTEURIZED MILK In the case of ungraded milk, only the pasteurization plants are under the inspection and supervision of the Illinois Department of Public Health. Supervision of the dairy farms supplying the plants is under the Illinois Department of Agriculture. This department makes no inspections of these farms at the present time. The sanitation requirements for the pasteurization plants, however, are identical with those for plants handling Grade A milk and inspection of the plants is made with the same frequency. Because of the absence of any state bacteriological standards for ungraded pasteurized milk, only phosphatase examinations are made of this supply.

The ungraded milk supply sold in the county is procured from twenty-two pasteurization plants, seven of which are located within the county, six in other counties in the state, eight in the state of Indiana, and one in the state of Wisconsin. The raw-milk supply for these plants is procured from 2,169 dairy farms located in Illinois, Indiana, and Wisconsin. Records of the Illinois Department of Public Health show the following Public Health Service compliance ratings for the ungraded supplies: dairy farms, 43.11 percent; pasteurization plants, 71.58 percent; pasteurized milk, 57.35.

The compliance rating for the dairy farms was compiled from the reports of inspections made during the survey of fifty-eight dairy farms selected at random, a number considered adequate by the U. S. Public Health Service for this purpose. Because no bacteriological examinations of either the raw or pasteurized milk supply are made by any official agency of record, both the entire raw and pasteurized milk supplies were penalized accordingly.

In matters of equipment and operation the pasteurization plants handling ungraded milk are substantially the same as those plants handling Grade A milk. If both types of plants are compared in all items except compliance with the bacterial standard, which are not

² The term "compliance rating" is used to indicate the extent to which all items of sanitation met the requirements in the U.S.P.H.S. code.

applicable to ungraded milk plants, the two ratings are 75.10 percent for the Grade A plants and 71.58 percent for the ungraded plants.

With the producing farms, however, the results are different. For the Grade A farms, the rating, based on all items except compliance with the bacterial standards, is 73.62 percent. For the farms supplying ungraded milk, the rate is 43.11 percent.

In 1945 the Illinois Legislature made some changes in the milk laws to bring them up to date compared with present recommended methods. In addition, extension of state control over Grade A milk was made possible by the requirement that plants processing Grade A milk obtain a state permit to use the Grade A label. Permits are issued automatically to all plants in municipalities in which the plants under their control maintain a rating of 90 percent as determined by survey. Each individual plant in a city which did not maintain a rating of 90 percent must apply to the Illinois State Department of Public Health for a permit. This plant and its producing farms will then be under state supervision until the city in question is able to attain a 90-percent rating again. The control thus authorized will permit more direct supervision by the state over the control methods followed by cities and particularly over the persons employed by the city as milk inspectors.

SUMMARY FOR COOK COUNTY (INCLUDING CHICAGO)

Milk supplied through dealers in Cook County amounts to 523,767 gallons per day, or one pint per capita, all pasteurized. Ninety-five and one half percent of this milk is Grade A pasteurized, and with the exception of 1,670 gallons under the inspection of the Evanston Health Department, is produced under the requirements set forth in the standard ordinance. The pasteurized-milk rating for this portion of the supply is 89 percent. The 93 percent of this Grade A milk supply controlled by the Chicago Health Department has a rating of 91 percent.

Including the ungraded pasteurized milk, which constitutes 4.5 percent of the total supply, the rating for the milk supply of the county as a whole is 87.7 percent. This rating ranks high for counties in the United States.

With the adoption of the standard ordinance by Evanston and by Cook County the entire county and all its municipalities would be operating under the same ordinance and code, a very desirable condition.

COMMENTS (COOK COUNTY EXCLUSIVE OF CHICAGO)

Milk-sanitation control is carried on by Evanston, the North Shore municipalities (Glencoe, Highland Park, Kenilworth, Lake Bluff, Lake Forest, Skokie, and Winnetka), Oak Park, and La Grange under local direction. The ratings for Evanston, Oak Park, and La Grange are considered less than satisfactory. Inspection is carried on largely by men with no technical training and under no technical supervision. The failure of the control to meet the required 90 percent appears to be due largely to defects in cleanliness and bactericidal treatment of equipment and containers. This factor, in addition to other considerations, indicates either lack of proper inspection methods or lack of knowledge on the part of the inspectors as to proper inspection procedures.

The new authority granted the state health department in relation to permits will place the plants in cities not attaining a 90 percent rating automatically under the supervision of the Illinois Department of Public Health and will permit the state officials to exercise more direct supervision over the local inspectors. Supervision not now provided will be made possible by this procedure.

Until the county health department is in a position to take control over milk production and processing in the county, the state might delegate to the county its authority for direct supervision over milk-control activities within the county.

RECOMMENDATIONS FOR COOK COUNTY

It is recommended that:

1. The Illinois Department of Public Health shall exercise its present authority to require permits of all plants processing Grade A pasteurized milk.

2. The milk sanitarians of the Illinois Department of Public Health assigned to the Chicago District Office shall exercise supervision over milk-sanitation programs in communities where the milk sanitation rating is less than 90 percent.

3. The Board of Commissioners of Cook County shall adopt the Standard Milk Ordinance and Code recommended by the U. S. Public Health Service requiring that all milk sold be Grade A, and be pasteurized in the area under the jurisdiction of the Cook County Department of Public Health.

4. The Cook County Department of Public Health shall be pro-

vided with personnel sufficient to enforce this ordinance adequately, in accordance with the recommendations presented in Chapter 42.

5. Municipalities in Cook County not under the jurisdiction of the Cook County Department of Public Health shall adopt the ordinance and code noted in recommendation three and shall enforce its requirements.

6. The milk-inspection staff of the Chicago District Office of the Illinois Department of Public Health shall be increased in order that more time may be given to furnishing technical assistance and supervision to the milk-inspection staffs operating in Cook County.

FROZEN DESSERTS

by Harold Wainess

DURING THE PAST few decades ice cream has changed from a luxury to a rather important item in the diet of the American people. In 1900 the amount of ice cream consumed by the people of Illinois was a fraction of a gallon per person per year. In 1944, according to available records, the reported annual consumption had increased to 3.5 gallons per person. The information collected during the course of this survey indicates that the present consumption in Cook County is more than 6 gallons per person per year.

Since milk and cream are the principal ingredients of ice cream, protection of the public health requires the same sanitary control over the production of the milk and cream used, its processing, and its handling, as is required for fluid milk. Sanitary control over the manufacture of ice cream is being carried on by many health departments, though the rigid requirements imposed for the production of fluid milk and milk products have not always been applied to ice cream production.

The U. S. Public Health Service has prepared a recommended "Frozen Dessert Ordinance and Code," together with inspection report forms and rating procedures, similar to that in use for milk and milk products. This ordinance has not, however, been adopted as generally as has been the U. S. Public Health Service milk ordinance.

The erroneous impression that low temperatures maintained for freezing and storage of ice cream destroy pathogenic organisms has been exploded long since. Virulent streptococci were found to be only slightly less numerous after eighteen days in storage and to lose none of their pathogenic power. Typhoid fever organisms inoculated into ice cream mix and stored at 24–25 degrees F. survived 12–39 days. Diphtheria organisms, after being frozen for four days, were inoculated into guinea pigs. All the pigs died of diphtheria. Recent experiments prove that the undulant fever organism can be isolated,

even after months of freezing, from ice cream inoculated with this organism, either artificially or naturally.

An example of the ability of disease germs to withstand freezing temperatures occurred at a college in Alabama. One hundred eighty-nine students were stricken with food poisoning after eating ice cream. Investigation revealed that proper freezing and storage temperatures had been observed, but the mix had not been pasteurized. The source of infection was traced to an infected cow whose milk was used in the ice cream mix.

The possibilities of bacterial contamination in the manufacture and distribution of ice cream are greater than in any other dairy product. The many ingredients used in the mix, in addition to milk and cream, such as sugar, stabilizer, egg, flavoring, coloring materials, and other items, provide many avenues for contamination. In addition, nuts and fruits are often added after pasteurization.

Investigators have found that coloring materials and nuts sometimes contain millions of organisms, many of them pathogens. Sugar, if improperly handled and stored, often carries organisms highly resistant to the pasteurization temperature.

From 1939 to 1944, inclusive, 42 outbreaks of disease caused by milk and milk products and attributed specifically to frozen desserts were reported in the United States, with 1,181 individual cases of illness. This number of outbreaks is second only to the number traced to fluid milk. Commercial products were responsible in more than half the outbreaks. More than 50 percent of these outbreaks and cases were attributed to frozen desserts made from mix which was raw or had been pasteurized improperly. Lack of refrigeration, improper pasteurization temperatures, improper equipment, and unwholesome ingredients were the major causes of these outbreaks.

The only safe ice cream mix (the product prepared before freezing) is one which has been pasteurized properly. It is therefore important that pasteurization plants be so controlled that there are no loopholes or opportunities for the production of an unsafe product.

Chemical and bacteriological analysis of an ice cream supply does not actually measure the sanitation status of that supply. Such analysis merely demonstrates to some degree the amount of contamination of any particular sample. The amount of contamination to which the product is exposed must be considered in measuring the actual sanitary status of an ice cream supply.

Surveys are conducted to determine the degree to which ice cream

manufacture complies with the recommended ordinance requirements. The results of these surveys are computed on a numerical basis. Each item of sanitation is given a numerical weight, which varies in accordance with the relative sanitary significance of that item. Therefore, if there were complete compliance with the requirements in the *U. S. Public Health Service Frozen Desserts Ordinance and Code* (1940 edition) in the production of all frozen desserts within a given area, the compliance rating for that area would be 100 percent. A rating of 90 percent is considered to represent a reasonably satisfactory level of compliance.

The provisions of the U.S.P.H.S. ordinance were the criteria used in the survey made of the sanitary control over the manufacture of ice cream in the Chicago-Cook County area without regard for existing local ordinances.

In making this survey, it was necessary to consider two types of manufacturing plants, as well as the sources of milk and cream and the various steps taken in its manufacture. While both preparation and freezing of the ice cream mix may be carried on by the same plant, in general, the plant which prepares the mix sells it to other concerns which freeze and package it for sale. Mix is also sold to restaurants or other retail establishments which freeze it in "counter freezers" and sell it on the premises. Only 14 of the 46 plants surveyed in the Chicago-Cook County area froze and prepared their own mix.

FROZEN DESSERT PLANTS IN CHICAGO

The survey covered 25 plants; 13 prepared their own mix, and 12 froze the product received from Grade A plants. The compliance rating for these 25 plants was only 82 percent. In comparison with the 94 percent compliance rating received by the milk pasteurizing plants in September, 1945, this 82 percent rating indicates either laxity in enforcement at the supervisory and inspection levels or the lack of a proper ordinance covering frozen desserts. In the rating schedule the six items under pasteurization have a combined weight of 30 points, or 30 percent of the total rating. Under this heading, the plants pasteurizing ice cream mix received 23.00 points as compared with 29.92 points out of a possible 30 points received by the plants pasteurizing milk.

VARIATIONS FROM PRESENT U.S.P.H.S. CODE One of the basic reasons for the lowered rating is the lack of a suitable ordinance gov-

erning sanitation practices in frozen dessert plants. The present ordinance allows too many loopholes to be fully effective. Some of the many variations from the present U. S. Public Health Service Code are outlined here: (1) no provision for the screening or other protection of outer openings and no requirement for self-closing doors; (2) tanks, vats, kettles, caldrons, and other receptacles not used in the pasteurizing process are not required to be covered; (3) toilet not require to have self-closing door or washing sign for employees; (4) no mention of an adequate and safe water supply; (5) no provision for proper floor drainage; (6) no provisions for sanitary piping; (7) approved construction of equipment and containers is not prescribed; (8) no mention of waste disposal or covering of trash and garbage; (9) chlorine not permitted as a bactericidal agent under the present code; (10) no provision for storage and handling of both multi-use and single service containers; (11) no requirement that mix be transported in sealed cans; (12) no requirements for approved automatic packaging; and bactericidal treatment of hands in hand packaging; (13) no provisions relative to overflow, spillage, or returns; (14) no mention of surroundings; (15) required bacterial plate count for ice cream mix of 100,000 compared to U. S. Public Health Service Code requirements of 50,000 and no bacterial standards for finished ice cream; (16) no requirements for adequate storage, handling, and refrigeration of ingredients.

TABLE 54. SPECIFIED ITEMS OF PASTEURIZATION BY PERCENT OF COMPLIANCE WITH U.S.P.H.S. ORDINANCE (CHICAGO)

| <i>Item of Sanitation</i> | <i>Percentage of Compliance</i> |
|------------------------------|---------------------------------|
| Thermometer specifications | 100.0 |
| Temperature and time control | 60.0 |
| Recorder charts | 62.1 |
| Inlet and outlet valves | 83.4 |
| Air heating | 92.5 |
| Vat and pocket covers | 87.0 |

Even the present ordinance has not been enforced strictly. Several of the important items of pasteurization have been neglected. Fifteen of the twenty-five plants surveyed violated one or more of the sections relating to pasteurization. In several plants the inspectors had not checked the indicating and recording thermometers. As a result, the recording thermometers read 2 to 5 degrees Fahrenheit higher than the indicating thermometers. Recording thermometer charts were unsatisfactory and received a rating of only 62 percent. The

percent of compliance with U.S.P.H.S. ordinance standards for various other items of pasteurization are shown in Table 54.

The present city ordinance also requires pasteurization of all sherbets and similar mixes. Yet four of the plants surveyed, which produced approximately 35 percent of the total number of gallons of sherbet sold, were not pasteurizing sherbet and similar mixes. Many plants used small kettles to heat such ingredients as syrups and chocolate. These kettles must be protected in every way from contamination. Covers were missing and outlets valves not constructed of sanitary piping.

Equipment in many plants was maintained poorly, and the use of cans made, not of dairy metal, but of other material, which cannot be cleaned easily, was noted. A can of this type dents and rusts easily and has seams that break open when the cans are dropped or mishandled. Open seams, dents, and similar defects are harboring places for organisms and can very well be the cause of contamination.

Careless packaging was very common. There is no reason for employees to handle the finished product promiscuously. The small amount of handling necessary can be safeguarded by requiring frequent washing and bactericidal treatment of the worker's hands.

Other defects in sanitation included such items as inadequate protection against flies, lack of covered garbage cans, improper storing of metal cans and single service containers, and improper storing of ingredients.

CONCLUSION

The city frozen dessert ordinance, while much less rigid than the recommended U. S. Public Health Service Ordinance and Code, requires the use of Grade A milk and cream, in the manufacture of frozen desserts and also requires pasteurization of all mixes. While inspection of ice cream plants is also carried on by the city milk inspection service, the survey ratings for those items pertaining to pasteurization were lower than for milk processing plants. With a proper ordinance and adequate inspection service, there appears to be no reason why the frozen desserts plants should not attain a rating above 90 percent, as do the milk pasteurization plants.

RECOMMENDATIONS

It is recommended that:

1. The latest edition of the Frozen Dessert Ordinance and Code recommended by the U. S. Public Health Service shall be adopted.

2. The present ordinance requiring pasteurization of all frozen desserts including sherbets, shall be enforced more rigidly.

3. An inservice training program shall be instituted for the entire inspection staff and include instructions in sanitation of frozen dessert plants.

4. A training program to acquaint frozen dessert plant employees with proper public health practices shall be instituted.

5. Only individuals with training and experience in the fields of milk sanitation shall be employed as milk sanitarians, all employees shall comply with civil service requirements, and the practice of repeating temporary appointments shall be discontinued.

PRODUCTION OF FROZEN DESSERTS IN COOK COUNTY (EXCLUDING CHICAGO)

Frozen desserts sold in Cook County outside Chicago are obtained both from plants operating under the control of the Chicago Health Department and from plants located outside Chicago, over which no sanitary controls are exercised. Twenty-two of the non-Chicago plants (probably most of those in operation in Cook County outside Chicago) were surveyed. Only one plant both processed and froze its own ice cream mix. Sixteen of the others purchased their mix from plants outside the county. Five of these mix-manufacturing plants were located, respectively, in De Forest, North Prairie, and Neenah, Wis., Calien, Mich., and Sandwich, Ill. Ungraded milk and cream from uninspected sources were used by all these mix plants, and there was little or no plant inspection by any health authority. The rate of compliance with the *U. S. Public Health Service Frozen Desserts Ordinance and Code* found for the twenty-two plants surveyed was 47.2 percent.

WEAKNESS OF CONTROL MEASURES The lack of enforcement and control in Cook County (excluding Chicago) is deplorable. Not one of the eighty-nine communities is safeguarding the health of the county population properly in respect to the control of ice cream production. Although five communities (Oak Park, Cicero, Chicago Heights, Evanston, and Park Ridge) have ordinances which require compulsory pasteurization, these ordinances are not being enforced. In most cases the plants in which the mix is pasteurized have never been inspected. Only one of the five communities with frozen dessert ordinances has adopted the *U. S. Public Health Service code*.

Ordinances range from mere license-collecting statutes or simple

references to the existing milk ordinances to one elaborate code which defines each function of the plant operations. The one community which adopted the U. S. Public Health Service code in 1942 has paid little attention to its requirements. In several of the communities with ordinances it is impossible to provide inspection of frozen dessert and mix plants outside their corporate limits, because clauses in their ordinances restrict the travel of the local inspectors.

Health departments throughout the county, outside Chicago, keep few records of conditions in frozen dessert plants. These departments should institute a bookkeeping system, similar to the one used for milk and milk products.

Lack of state legislation prevents the Illinois Department of Public Health from exercising control over the manufacture and sale of frozen desserts. The State Department of Agriculture carries on some activity in connection with the food value of the product, but assumes no control over the sanitary aspects of its manufacture.

There is little sanitation control over the plants where the mix is processed and supposedly pasteurized before shipment to the freezing plants in the county. Five mix plants supply the greater part of the mix used in the county (7,230 gallons daily). All these plants violate important provisions for proper control over pasteurization processes and equipment. One plant selling approximately 1,100 gallons a day in the county was delivering its mix raw into communities where pasteurization is compulsory. Another was making a very feeble attempt at pasteurization, which varied from merely flashing the mix to 160 degrees F., to holding it at 155 degrees F. from 10 to 35 minutes. At one plant the mix was heated for only 20 minutes, reportedly because a suburban health department had instructed the plant manager not to keep the mix at the required temperature for the 30-minute period recommended in the U. S. Public Health Service code.

COMPLIANCE RATINGS The extent to which the twenty-two plants complied with the U. S. Public Health Service requirements for sanitation is indicated by the ratings given in Table 55. Only 45 percent of the plants complied with the requirements for proper cooling of the mix. In general, great negligence was shown in the handling of this very important procedure. The danger of slipshod methods cannot be overemphasized. Improper cooling results in a material increase in the bacterial count, and disease organisms, if present, may grow to dangerous proportions.

TABLE 55. SPECIFIED ITEMS OF PASTEURIZATION BY PERCENT OF COMPLIANCE WITH U.S.P.H.S. ORDINANCE
(COOK COUNTY OUTSIDE CHICAGO)

| <i>Item of Sanitation</i> | <i>Percentage of Compliance</i> |
|------------------------------|---------------------------------|
| Thermometer specifications | 20.0 |
| Temperature and time control | 7.0 |
| Recorder charts | 20.0 |
| Inlet and outlet valves | 81.0 |
| Air heating | 20.0 |
| Vat covers | 45.3 |

Lack of proper protection against flies was common throughout the plants. Doors, windows, and screens were either missing or were open in more than 80 percent of the plants, and in many cases flies were abundant. Flies not only can infect raw materials but can nullify the effectiveness of pasteurization.

According to the U.S.P.H.S. code, "containers of ingredients" must "be unloaded either into a receiving room separated by solid or screened partitions from the pasteurizing, freezing, and packaging room or upon an outside platform and then pushed through a flap or fan-protected opening into the receiving or pasteurizing room." The purpose of this provision is to prevent unloading directly from trucks, thus making the entrance of flies difficult. A separate dump tank would also prevent dirty cans from being placed on top of the pasteurizers and consequent contamination of the mix. Seventeen of the twenty-two plants surveyed violated this important provision.

Proper handling of single service containers was neglected. This procedure received a rating of only 55 percent. The rating given to methods of storing containers was only 44 percent. Use of single service containers for milk and cream more than once is a dangerous practice. These cans are manufactured of thin gauge tin-plated steel of the "non-dairy-metal" type. Cans used more than once were commonly found to have open seams, dents, and rusted areas.

Packaging of the final product was also performed in a very careless manner. Contact surfaces were constantly handled, and usually hands were in contact with the ice cream. None of the plants visited provided bactericidal treatment for employees' hands. Hand-washing facilities were either absent or inconveniently located with respect to the rooms in which operations were conducted. Only a few plants provided sanitary towels which met U.S.P.H.S. standards.

One very important control measure is that mix which is not

frozen on the premises where it is pasteurized shall be transported in sealed containers. Only one plant observed this requirement. The chances for contamination under these conditions are obvious.

Labeling of containers was so inadequate that it was a farce. Statements on most of the labels did not indicate whether the mix was raw or pasteurized, and no dates were given. One plant used a blank label with only a scribbled number as identification.

The low compliance rating for these plants not only indicates the many plant violations but also shows the need for constant supervision by health authorities in the county and in communities either without ordinances or not at present enforcing them. In all cases, the county health department should make regular routine inspections of all mix plants supplying mix to freezing plants within the county and of all ice cream plants shipping the finished product into the county. The county health department should collaborate with the Chicago Health Department in making inspections wherever necessary to avoid duplication of work.

During the course of the survey it was noted that some companies maintained separate units for manufacture of ice cream for Chicago and Cook County for very obvious reasons.

CONCLUSION

The basis of a good ice cream is the quality of the milk and cream used in the raw mix. The use of uninspected, ungraded raw products in Cook County is a potentially dangerous practice. Since almost all these sources, including the plants processing the mix, are outside the county, some central public health agency, in this case the county health department, should assume responsibility for making regular inspections of all plants, including the plants outside the county. The ordinance adopted by the county health department should contain a requirement (like that provided in the Chicago ordinance) that only milk and cream from inspected Grade A sources be used in the manufacture of frozen desserts and that all mix be pasteurized.

The milk ordinance adopted by the Board of Commissioners of Cook County which requires all milk and milk products to be pasteurized, does not include ice cream mix or the ingredients of other frozen desserts, because they are not named as "milk products" in the state milk law, after which the county ordinance was patterned.

RECOMMENDATIONS FOR COOK COUNTY

It is recommended that:

1. The Board of Commissioners of Cook County shall adopt for the area under its jurisdiction the U. S. Public Health Service Frozen Desserts Ordinance requiring that only Grade A milk, cream, and milk products be used in the manufacture of frozen desserts.

2. Communities in the county not under the jurisdiction of the Cook County Department of Public Health shall adopt an ordinance similar to that recommended for the county.

3. Communities now having frozen dessert ordinances shall enforce the provisions of these ordinances, pending adoption of the ordinance recommended in item 1.

4. A division of milk sanitation shall be established in the county health department, under the direct supervision of an individual with training and experience in the fields of dairy sanitation. Establishment of such a department is essential in order to enforce effectively the recommendations presented above.

5. A training program for frozen dessert plant employees be instituted to acquaint them with proper public health practice.

EATING AND DRINKING ESTABLISHMENTS

by *R. W. Hart* and *Douglas B. Morton*

THE SUPERVISION of local eating and drinking establishments is a public health activity designed to minimize the spread of disease. Of the sixty-one communicable diseases reported to health departments, twenty-five diseases, or approximately 40 percent, may be spread through eating and drinking establishments. In 1944, 298 food-borne outbreaks of disease, exclusive of milk and water, were reported to the United States Public Health Service. These outbreaks involved more than 14,000 cases of sickness. It is believed that many other cases occurred which were never reported.

The frequency with which food-poisoning outbreaks occur and the types of outbreaks vary in accordance with the standards of sanitation which prevail in places where food and drink are sold. To evaluate the conditions in the eating and drinking establishments in Chicago and Cook County, a survey was made, based on compliance with the items of sanitation in the 1943 edition of the *Ordinance and Code Regulating Eating and Drinking Establishments* recommended by the Illinois Department of Public Health and the United States Public Health Service. The types of establishments inspected during this survey included restaurants, cafeterias, taverns, soda fountains, and lunch stands, selected on the basis of random sampling.¹

CONDITIONS IN CHICAGO

According to the records of the Chicago Health Department there are approximately 40,000 food establishments and units (restaurants, taverns, mobile units, food processing plants) which qualify for inspection under the provisions of the various food ordinances now in effect in Chicago. This study, however, is limited to approximately seventeen thousand permanent or fixed eating and drinking estab-

¹ Long experience in survey-making has demonstrated that results obtained by this method show an accuracy within 5 percent of that obtained when a complete survey is made.

lishments. The sanitation rating of this group was based on inspections made of 200 establishments.

VIOLATIONS OF U.S.P.H.S. CODE The combined sanitation rating of these 200 establishments was 31.5 points out of a possible 100. This rating represents the degree to which conditions in these establishments comply with the Grade A requirements of the U.S.P.H.S. code. One of the factors responsible for this low rating is the fact that the Chicago Health Department is not empowered to enforce requirements higher than those contained in the Chicago code, which are lower than the U.S.P.H.S. requirements. The Chicago code requirements should be made to equal those set by the U. S. Public Health Service.

Of the establishments surveyed, 99 percent were found to violate the three following items of sanitation: (1) disinfection treatment of dishes and utensils; (2) back siphonage from toilets, dishwashing machines, and sinks; and (3) garbage disposal methods. The following violations were found: cleaning of dishes and utensils, 98 percent; construction of equipment, 87 percent; toilet facilities, 98 percent; cleaning of equipment, 93 percent.

OTHER DEFECTS The inspections took into consideration general sanitation; cleanliness of premises, utensils, and equipment; sanitary construction of equipment; hygiene of food handling; and operational methods. The following specific defects and malpractices were general in the majority of the establishments.

1. Floors were in need of repair, many wooden floors having open cracks or broken places. Floors were not clean, particularly near equipment and in storerooms, passageways, toilet rooms, and basement food-preparation rooms. Sawdust was used on floors and in large refrigerators.

2. Walls and ceilings in kitchens, sculleries, and other food-preparation rooms were in need of repair or repainting. Sections of walls and ceilings, particularly near stoves, exhaust fans, and dishwashing equipment, were greasy and coated with dust.

3. Screens were either lacking, poorly fitted, or in poor repair.

4. Insufficient light was available on most working surfaces. Improper location of fixtures and a general deficiency in the number of light sources were responsible.

5. Toilet rooms were either unclean, poorly ventilated, improperly constructed, or showed a combination of all these defects.

6. Lavatories were either lacking, inconveniently located, or without soap, hot water, or towels. Very few establishments had facilities in the kitchen for handwashing. As a result pan and dish sinks and aprons were used for general hand cleaning.

7. Equipment of all types was generally of poor sanitary construction or had outlived its usefulness. The construction of some equipment made it difficult to clean. Meat blocks and wood-top tables and food-preparation counters had open seams and broken places filled with grease and decaying food particles. Battered and dented pans and pots, insanitary strainers, chipped enamelware, chipped and cracked dishes and cups were common. Knife handles were in poor condition, and knife racks mounted on meat blocks and tables were difficult to clean. Tin-plated food cans in No. 10 size were being used for various types of food storage. These cans are not intended to be used more than once and are not constructed for easy cleaning.

8. Utensils and equipment were not cleaned properly, partly because of faulty construction and partly because proper methods of cleaning were not practiced. Such items as stove tops and hoods, ovens, soup kettles, meat grinders, meat slicers, can openers, pots and pans, refrigerators, wood-top serving and work tables, meat blocks, and racks for knives were as a rule unclean. Pie shelves, malted milk mixers, ice cream scoops, cream dispensers, potato peelers and slicers, shelves under counters, surfaces in and behind ice cream cabinets ordinarily were either neglected or improperly cleaned. Cloths used by chefs, waiters, and others for wiping tables and counter tops, utensils, stoves, and work areas were usually dirty. In many cases they were filthy.

9. Eating and drinking utensils were inadequately washed. Many dishwashing machines had outlived their usefulness or were operated improperly. Many cooking and frying utensils apparently were seldom washed since layers of rancid grease and food were baked on the exterior. Insufficient or unsatisfactory cleaning agents and washing powders were used. Wash water was not changed often enough with the resultant formation of scum. Inadequate water heating facilities were general.

10. Few establishments used water heated to the 170° F. required to kill germs. Most dishwashing machines lacked an auxiliary or booster heater for the rinse water. Few of the establishments were attempting bactericidal treatment of large food equipment, meat slicers, saws,

cleavers, and pots and pans. Where a hot water rinse was used with hand dishwashing methods, the water was not hot enough. Few places had wire baskets or racks for immersing the dishware. To conserve hot water many establishments had placed a small wooden or metal container in the sink for use in rinsing. These were inadequate. Rinse water was not changed frequently enough. Few places attempting chlorine disinfection of utensils were using this procedure correctly or consistently. In the majority of places all or part of the utensils and tableware were wiped with dirty towels which were used improperly and not restricted to use on dishes.

11. In practically all establishments some utensils were stored and handled improperly. Such practices as placing fingers in cups, glasses, bowls, food, and on the "business" end of silverware were common. Dispensing scoops for ice cream were kept generally in a pan or jar of milky water. Single service containers were often mishandled.

12. Toilets, lavatories, dishwashing machines, and steam tables had submerged water connections or were so connected as to be subject to back siphonage. Garbage containers of any type were used, including wooden and paper cartons. Since few of these were kept covered or clean, they provided an abundant source of food for rats and other vermin. Garbage containers were stored in halls, basements, and areaways which were frequently filthy.

13. Cream-filled pastries were not refrigerated. Much meat and other cooked food was left in the kitchens for long periods without refrigeration. Dishes and pans were placed on top of food. Meat was stored in a moist atmosphere. Overcrowding of refrigerators often blocked air circulation. In some instances meats hung on hooks dripped blood into food products stored beneath.

14. Milk and cream were dipped from bulk containers or, in a few places, poured from quart bottles. Some unapproved milk pumps were found. Few places handled milk properly in preparing milk shakes. Many cream dispensers were not refrigerated. Often, teapots and other unapproved types of containers were used for filling cream urns. Such containers cannot be cleaned properly.

15. Little attention was directed toward preventing unnecessary handling of food. Open display of food was general in the serving rooms and in the kitchen. Steam table temperatures were frequently found at an incubation level. The required temperature of below 50° F. was not maintained in refrigerated tables for salads, meats, and other perishables.

16. Occasionally cats or dogs were found in the kitchens and storerooms.

17. Smoking by employees in the kitchens was prevalent.

18. Many premises were not neat or clean. Some locker or dressing rooms for employees were inadequate or untidy. Storage and handling of soiled linens and uniforms were generally unsatisfactory.

RESPONSIBILITY FOR CONTROL Public-health control of food and drink is exercised by the city health department through various sections of Chapter 82, 95, and 130 of the city code. Some of the present sections are of long standing and are incomplete, since they do not contain provisions based on the latest scientific knowledge of the effective control of food-borne diseases. The inadequacy of the city code accounts in part for the poorness of the rating. Applications for licenses to operate eating and drinking establishments are referred to the health department for investigation and approval before the issuance of the license. Since this practice of referral is not required by the city code it is not followed in the case of peddlers and liquor dealers. As a result, food peddlers and those liquor establishments selling alcoholic drinks for consumption on the premises are permitted legally to begin operations without the knowledge and approval of the health department.

LICENSE FEES For the year 1945, \$299,878.81 was collected in license fees from retail food dispensers (eating establishments), \$3,803,800.00 from retail liquor establishments engaged in the sale of alcoholic liquors, and \$398,116.65 from wholesale food establishments. Yet, the total 1945 appropriation to the health department for the Food Inspection Section was \$107,568.00.

FOOD-HANDLING PROCEDURES IN HOSPITALS As part of the Survey, inspections were made of the food-handling facilities in a representative sample of hospitals. The combined sanitation rating of these hospitals was 25.9 points. This rating is less than the combined rating found for all the establishments surveyed in Chicago. Obviously, there is considerable need for improvement.²

PERSONNEL IN FOOD SECTION The present food-inspection force is totally inadequate to carry on a satisfactory food-sanitation program. At the present time the personnel of the section includes the chief, four supervisors, twenty-five full-time inspectors, and seven part-time inspectors. Of this total only thirteen full-time inspectors are assigned part time to the inspection of eating and drinking

² See Chapter 46 for further discussion of this subject.

establishments. Their other responsibilities include the supervision of sanitary conditions in bakeries, confectioners, groceries, markets, and other food stores.

For inspection purposes the city is divided into thirteen districts, the size depending upon the number and distribution of the food establishments. The area of the downtown district approximates 1 square mile, while that of the southeast district is nearly 24 square miles. Inspectors who drive their own cars receive 90 street-car tokens per month; the inspectors who do not drive their own cars receive actual transportation costs in tokens, not to exceed an average of 90 tokens per month. The inspector's hours are from 8:30 A.M. to 4:30 P.M. They report to the health department each day at approximately 3:30 P.M. in order to receive the assignments for the next day. Every inspector also reports by telephone each day between 12:30 P.M. and 1:00 P.M. for special assignments.

The activities of the inspectors assigned to food inspection within their districts are: (1) investigation of reported food poisoning outbreaks, (2) inspection of establishments applying for licenses, (3) inspection of establishments about which complaints have been filed, (4) reinspection of establishments which have been ordered to make corrections, and (5) routine inspection visits. During January, February, and March investigation to determine eligibility for licensing and inspections as a result of complaints require practically all of each inspector's time. According to the records, approximately fifty license applications, and thirteen complaints are received daily throughout the year. Because of this volume of priority work, which may be widely scattered throughout the city, routine inspections of the majority of the other food and drink establishments cannot be made even once a year. Periodically the work of the entire inspection staff is concentrated in the loop and in other highly developed business areas for intensive restaurant clean-up campaigns.

RECORDS OF INSPECTION The present system of keeping records of inspections of individual food establishments in folders classified according to address is cumbersome. It does not permit easy reference to the records of each establishment for the determination of improvements or regression in sanitary conditions and the periodicity of inspections. Records of food-borne outbreaks kept in the Food Section are incomplete, since only part of these records are kept in this section, and the remainder are kept in the Division of Preventive

Medicine of the Chicago Health Department. In 1945 the health department reported only three food-borne outbreaks of disease, involving 619 persons.

LABORATORY CONTROL OVER CLEANLINESS OF EATING AND DRINKING UTENSILS The bacteriological examination of eating and drinking utensils used repeatedly by the public is an accepted method of judging the efficiency of washing and cleansing procedures in a food-handling establishment. A section recently added to the Municipal Code of Chicago (130-26) makes the following requirements: multi-use eating and drinking utensils should, after having been cleansed and disinfected, show a bacterial count of not more than 100 bacteria per utensil in swab tests made in accordance with the Standard Method proposed by the American Public Health association.

During 1944 and 1945, washing and cleansing procedures were tested by collecting and examining bacteriologically a total of 3,602 swab samples. Of the samples examined, 2,692 or 74.7 percent had bacterial counts in excess of the present standard of 100 per utensil.

At the present time the application of this desirable method of checking the cleanliness of utensils is limited by the inadequacy of the inspection staff and by the fact that the Chicago Health Department laboratory can at present examine only about twenty specimens per day. This number of examinations is totally inadequate if good control is to be effected. Consideration should be given to the provision of additional laboratory facilities for this program in order to utilize fully the control possibilities of the swab test.

EDUCATIONAL ACTIVITIES The chief activity of the Food Section staff is inspection. In the judgment of the survey staff, greater attention should be directed toward explaining to restaurant operators the public health reasons for the city code requirements and suggesting methods for correcting defects. Although instruction has been given to interested groups at their request and the Food Section now carries on some educational work for food handlers, much more work of this type is needed. Additional provision should be made for the establishment of permanent instruction facilities through which food handlers and other interested groups could learn the reasons for sanitary handling of food and equipment.

The Food Section now provides on-the-job training for a period of three to five weeks to new inspectors before assignment. While some periodic training is given the inspectors on policies, methods, tech-

niques, and interpretations relative to the city food code and specialized technical personnel are made available for staff education, this training and education should be intensified.

CONTROL OVER CONSTRUCTION Before a permit for construction can be obtained from the Department of Buildings the present city code requires that general engineering plans showing the building layout be submitted to the Chicago Health Department. The Food Section reviews plans for retail-milk and ice-cream equipment, but submission of plans for food establishments, showing building layout and placement of food equipment, has not been required since the health department plan examiners have been transferred to the building department. An effort should be made to encourage submission of all such plans for approval and to include detail plans of good equipment.

The present Municipal Code of Chicago does not require the submission of engineering plans showing the detail construction of equipment used for the storage and processing of foods. Provision should be made requiring approval of such equipment in order to determine that the construction and materials are such that they may be readily cleaned and that in their use or operation food shall not be subject to conditions that could render it detrimental to health.

CONTROL OF DISEASE The health status of food handlers in eating and drinking establishments is a most important factor in the transmission of diseases through such establishments. Diseases such as typhoid fever and bacillary and amoebic dysentery are normally transmitted from person to person through the medium of food, drink, or contaminated utensils. Tuberculosis can be transmitted readily in this manner by a tuberculous individual. The presence in food handlers of open or infected wounds, boils, or other infectious skin diseases may also be the cause of contamination of food and drink and may result in serious outbreaks of so-called "food poisoning."

At present the Chicago Health Department has the power to require employees of food-handling establishments to submit specimens of discharges from the body or other necessary specimens for laboratory examinations. No routine examination procedure by either private or official physician is provided.

The health department is also granted general broad powers restricting the employment of persons known to be carriers of certain diseases or to have an infectious disease in a communicable form.

In the interest of public health, the provision of reasonable rules and regulations to control the transmission of such diseases and others is obviously desirable. Section 9 of the *U. S. Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments* prohibits persons having or suspected of being carriers of such disease from employment in any restaurant. It is provided also that no person having a discharging or presumably infected wound, sore, or lesion, shall handle food, drink, utensils, or food equipment.

Official health department examinations are desirable for food handlers who give a history of diseases which may be spread through food, drink, utensils, or equipment. It is believed that the Chicago Health Department should provide the facilities to carry out the supplemental procedures noted in Section 9 of the recommended ordinance.

COMMENT ON CONDITIONS IN CHICAGO

The ideal of any city health department is to develop a health program adequate to meet the health problems of the city and to control and prevent unnecessary disease and death. The failure of the city to provide sufficient personnel for the supervision of public eating places is one of the chief causes of the low sanitation rating found for the eating and drinking establishments in Chicago (31.5 points out of a possible 100). A rating of 90 would represent reasonably satisfactory compliance with the requirements of the United States Public Health Service ordinance.

Parts of the present Chicago code governing food establishment sanitation are of long standing and need to be revised in accordance with present scientific knowledge. The code should outline also detailed inspection requirements. The present code does not include provisions authorizing the health department to issue permits for any food establishments except those engaged in milk production, or to grade them. Hence, the health department is unable to utilize suspension or revocation of permits or degrading as enforcement measures. Lack of these provisions also allows the operation of drinking establishments which may provide serious health hazards to the public, without the knowledge of the health officer.

To promote uniformity of inspection through standardization of interpretations, many cities have adopted the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking*

Establishments which is recommended by the Illinois Department of Public Health. This food ordinance and code is patterned after the ordinance and code regulating milk supplies which has been employed so successfully by the Chicago Health Department in assuring the safety of Chicago's milk supply. Chicago's methods of milk control have won national recognition.

Obviously, the present force of thirteen inspectors cannot devote to each of the approximately 17,000 eating and drinking establishments the time needed to secure satisfactory compliance with accepted standards of sanitation. It was noted that many establishments which had the facilities necessary for compliance with the standards of sanitation were not employing proper methods of operation. Furthermore, it was evident that in many places the infrequency of inspections was responsible, at least in part, for the management's attitude toward proper use of these facilities and the employment of proper methods of operation.

In comparison with other large cities, an insufficient number of inspectors handicaps the Chicago Health Department in its effort to improve supervision and services to eating and drinking establishments. To provide a minimum degree of safety to the public against food-borne diseases and to educate the owners and operators of food establishments in accepted sanitary practices, the staff should be increased substantially.³ These men should possess educational qualifications that guarantee a basic knowledge of the sciences and should also be experienced in public relations. The salary schedule should be such that adequately qualified personnel will be attracted to this service, and the salary increases provided should be sufficient to hold personnel after they have become thoroughly experienced.

Education of food handlers is considered one of the most effective methods of obtaining compliance with sanitation requirements and thus of reducing the possibility of food-borne infection. Many health departments, recognizing the need for education and its value, are introducing training courses for food handlers. In these courses restaurant employees are given some basic knowledge of food-borne diseases, modes of disease transmission, and methods of preventing the spread of disease through food processing and handling. The Chicago Health Department's Food Section has no such educational training courses in progress at the present time. Such courses have

³ See section on personnel requirements, Chapter 42.

been given in the past, however, and arrangements for future courses for restaurant employees are being made.

The inspectors spend much unnecessary time daily traveling to the health department office in order to receive assignments and instructions and to file reports. From ten minutes to one hour are consumed in travel each day, depending upon the distance of the inspector's district from the department. In order to minimize this loss of time and to improve efficiency and effectiveness, a few large health departments have decentralized their inspection service through the establishment of district health offices staffed with trained public health personnel capable of meeting and solving the problems of that area.

During the survey there was opportunity to discuss with restaurant operators their proposed modernization programs which undoubtedly will require expenditures for building and equipment running into millions of dollars. In order to determine in advance whether the building and the equipment will fill the requirements of the code, properly trained personnel should be provided in the Food Section to review and discuss such plans. Such a service eliminates misunderstandings, minimizes code violations, and wins the wholehearted support of the industry.

Interviews with restaurant managers during the survey indicated a sincere interest on their parts to serve safe, wholesome food in a sanitary environment, and effective leadership from the health department should stimulate this group to do what is necessary to bring about satisfactory conditions.

With the fulfillment of the recommendations suggested by the Chicago Cook-County Health Survey, the people of Chicago can be assured a food supply as safe as a reasonably strict enforcement of a modern restaurant ordinance can make it. Proper effort can effect as much progress in restaurant sanitation as has been accomplished in milk sanitation in Chicago. In 1935, for example, Chicago's milk sanitation rating was 59 points. After the passage of the milk ordinance in that year a well-planned, continuous improvement program resulted in an increase in the rating of the milk sanitation to above 90 points in 1937. This rate has been held since then. There is every reason to believe that a similar sanitation program for eating and drinking establishments will secure for these establishments a reputation as enviable as that which Chicago now holds in respect to its milk supplies.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. The latest edition of the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments* as recommended by the Illinois Department of Public Health shall be adopted and enforced adequately.

2. The supplementary material in Section 9 of the 1943 edition of the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments* pertaining to disease control shall be adopted and enforced adequately.

3. In order to carry out an efficient food sanitation program the inspection staff shall be increased in accordance with the recommendations contained in Chapter 42.

4. Every effort shall be made, particularly by offering adequate compensation, to attract personnel properly qualified and equipped through training in the basic sciences, sanitation, food production, and processing, as well as through experience in public relations.

5. The services of a qualified and experienced health educator shall be utilized to plan and to conduct a continuous series of training schools for restaurant operators and employees.

6. A more comprehensive filing system shall be set up to facilitate easy reference to food establishments as well as a ledger or a similar form for analysis of improvements and progress of the food sanitation program; further, that there shall be provided sufficient clerical personnel for preparing adequate detailed reports of activities covered during the year.

7. An intensive program of inservice training shall be arranged for inspectors of the department with guest lecturers provided for technical subjects. Provisions should also be made for securing specialized sanitation training at recognized schools of public health, at least for the supervisory personnel.

8. The president of the Board of Health shall request periodic evaluations and appraisals of the restaurant sanitation program by the Illinois Department of Public Health and the United States Public Health Service.

9. Enforcement shall be accomplished primarily through instruction and demonstration to owners and operators of food-handling places, resorting to legal procedures only when co-operation cannot be obtained.

CONDITIONS IN COOK COUNTY (EXCLUDING CHICAGO)

The survey of eating and drinking establishments in Cook County was carried on in a manner similar to that described for Chicago. According to the 1940 United States Census there were approximately two thousand eating and drinking establishments in Cook County, exclusive of Chicago. Of that number about six hundred were located in communities with less than 2,500 population or in rural areas. The survey covered a group of 130 establishments, selected at random, serving 52,785 persons daily. The inspection of this number of places provides a representative sample of existing conditions.

These establishments were considered in three groups, based upon the kind of health organization in the community. In Group I were placed establishments located in communities with full-time health departments; Group II, those in communities with part-time health departments in which full-time inspectors devoted a part of their time to food inspection; and Group III, establishments located in communities or rural areas in which little or no sanitary control was exercised. Ordinances, where they existed, were general and gave broad powers to the health officer. The rating obtained from the survey indicated that a higher rating was obtained for restaurants in communities in which the local authorities exercised some control than was obtained by establishments in communities without local control. The ratings for the three groups were as follows: Group I, 46.3 points; Group II, 44.7 points, and Group III, 33.5 points out of a possible 100. The county as a whole, exclusive of Chicago, received a rating of 42.5 points out of a possible 100. This rating is considerably less than the 90 points out of a possible 100 which is considered to constitute satisfactory compliance under the U.S.P.H.S. code for a Grade A Establishment.

The defects noted relative to the sanitary condition of the establishments inspected were substantially the same as those found in Chicago and described in that part of this report. It was found that 97 percent of the establishments surveyed violated the item pertaining to disinfection treatment of dishes and utensils and the item covering disposal of wastes; 93 percent were deficient in toilet facilities; 84 percent violated the item pertaining to cleaning of equipment; and 78 percent violated the item pertaining to lavatory facilities.

GROUP I Evanston and the communities served by the Win-

netka Health Department (Winnetka, Kenilworth, Glencoe) comprise this group.

Evanston.—The health department employs two full-time sanitarians, who devote approximately 40 percent of their time to inspection of eating establishments. Both men are civil service employees who have held their positions continuously for periods of 19 and 32 years, respectively. They have attended short public health courses and are members of various organizations directly related to their work.

The ordinance under which inspection of eating establishments is carried on is general in nature and gives the commissioner of health broad powers. An inspection form has been devised which lists many items of sanitation; a copy, with defects noted, is given to each establishment at the time of the complete inspection. The sanitary inspectors endeavor to visit each eating establishment at least every three months for complete inspection and more frequently for routine checkups. During 1945, 1,363 inspections were made and 980 samples from eating utensils collected for laboratory examination.

Twenty-eight of the ninety-seven restaurants and fountains in Evanston were selected at random and inspected during the survey. Inspection and rating were based on the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments*. The eating and drinking establishments in Evanston were rated at 44.8.

Winnetka, Kenilworth, and Glencoe.—The Winnetka Health Department, which also serves the villages of Kenilworth and Glencoe, employs a sanitary engineer and a sanitary inspector on a full-time basis. Approximately 15 percent of their time is devoted to the inspection of eating establishments. They have been employed in their present capacities for eleven and three years, respectively.

The food dealer's ordinance gives the health officer broad powers. The ordinance provides that the health department may promulgate rules and regulations governing conditions under which foodstuffs may be sold or offered for sale or consumption.

Rules and regulations have been promulgated which specify requirements for the major items of sanitation. They do not include a code of satisfactory compliance. A modified inspection form, similar to the U. S. Public Health Service form, is used. A grading system has been devised, and grade signs are posted in the eating establishments. Inspections are made monthly, and samples are collected for

determining the total number of bacteria on eating utensils. During June, 1946, 65 inspections were made and 22 laboratory samples were analyzed to determine the total bacteria count on eating utensils. Nine eating establishments were inspected during the survey and were rated at 51.6.

GROUP II Cicero, Skokie, Berwyn, Oak Park, Chicago Heights, Elmwood Park, Maywood, and Wilmette are included in this group.

Cicero.—This town maintains a part-time health department, which employs two full-time sanitary inspectors who devote about 50 percent of their time to the inspection of food-handling establishments. These men are not employed through a merit or civil service system and have had no formal education in sanitation. The food-dealer ordinance does require all persons engaged in handling food, food products, or beverages to furnish whatever history and submit to whatever type of physical examination the health officer may specify. An inspection form listing some items of sanitation is used. Food establishments are inspected annually and additional inspections are made on receipt of complaints. Twenty eating and drinking establishments, selected at random, were inspected during the survey and were rated 35.

Berwyn.—The public health district employs three full-time sanitary inspectors, one of whom inspects restaurants, dairies, and ice cream parlors and investigates nuisances. The ordinance regulating restaurants is general in scope and gives the mayor broad powers. An inspection form similar to the United States Public Health Service form is used. During the fiscal year 1944-45 a total of 493 restaurant inspections were made. Six restaurants were inspected in this survey and were rated at 52.3.

Oak Park.—The health department employs four full-time sanitary inspectors. One inspector devotes the greater portion of his time to the inspection of eating and drinking places. The restaurant ordinance provides the usual nondetailed broad powers to the commissioner of health. The inspector uses an inspection card listing some of the major items of sanitation. The restaurants are said to be inspected four times per year. During 1945 a total of 874 food store and restaurant inspections were made. Five eating and drinking establishments were inspected during the course of the survey and were rated at 53.

Skokie.—The department of health employs one full-time sanitary officer who is also the health officer. He devotes approximately

50 percent of his time to the inspection of eating and drinking establishments. The ordinance and inspection forms are similar to the *Ordinance and Code Regulating Eating and Drinking Establishments* recommended by the United States Public Health Service. These establishments are said to be inspected every five months. During the fiscal year 1945-46 a total of 105 inspections were made. Four establishments were inspected in the course of the survey and were rated at 50.4.

Other municipalities.—The four other communities listed, although not maintaining full-time health departments, employ one or more part- or full-time sanitary inspectors who devote at least a part of their time to the inspection of eating and drinking establishments. The ordinances in all these communities are general in scope and grant broad powers of inspection to the health commissioner. Inspection in these communities is largely on receipt of complaint or in connection with licensing. Inspection forms were not generally used. The compliance ratings in these municipalities were as follows: Chicago Heights, 50.7; Elmwood Park, 52.8; Maywood, 43.7; Wilmette, 37.4.

GROUP III: REMAINDER OF COUNTY Except for the communities just discussed, inspections, if any, are made by part-time health officers, police officials, or in some cases by any employee of the municipality or a member of the village board of trustees. These inspections are made mainly on receipt of complaints or in connection with the licensing of an establishment. The ordinances are in general very broad in character. They require in part that no unwholesome or adulterated food be sold and that the premises be kept clean and sanitary. Forty-six eating and drinking establishments were inspected during the survey and were rated at 33.4.

STATE CONTROL OF ALL EATING AND DRINKING ESTABLISHMENTS The inspection and control of all eating and drinking establishments, together with the manufacture, packing, storing, or distributing of food intended for sale, is vested in the State Department of Agriculture. The Division of Foods and Dairies is the operating agency for this department. In accordance with existing department precedent as determined by law, the inspection of food and dairy products consists primarily of spot checks and tests to determine whether factories are using wholesome and unadulterated materials in the manufacture of their product and to prevent misbranding. No routine sanitary inspections are made.

The sanitary regulations used by the State Department of Agriculture are general. Interpretation of these regulations is determined partly by precedent and partly by the ability, comprehension, and experience of the individual inspector.

The control of eating and drinking establishments is fundamentally a problem of local governments. The magnitude of the problem is such that inspection and control of these numerous establishments cannot be performed effectively at the state level. Full-time municipal health departments and county health departments are best suited to perform this type of control. With such local control, the Illinois Department of Public Health would become the advising agency on the state level in regard to the sanitary control of eating and drinking establishments.

COMMENTS ON COOK COUNTY (EXCLUSIVE OF CHICAGO)

Municipal ordinances regulating eating and drinking establishments were generally broad. They usually contained provisions for licensing such establishments and such general sanitary requirements as that no unwholesome food is to be served, premises are to be clean and sanitary, and inspection powers are usually to be delegated to the health officer. The ordinances include neither specific provisions in regard to sanitation nor a code of satisfactory compliance. Standards of sanitation are ordinarily left to the discretion of the enforcing officers, who, with the exception of a few trained inspectors, are unqualified.

The eating and drinking establishments in municipalities with full-time health departments received a compliance rating of 46.3 points out of a possible 100, whereas, the municipalities with part-time health departments rated 44.7 points. The rural area and the municipalities with little or no health department supervision rated 33.5 points. The over-all rating for the county (exclusive of Chicago) was 42.5 points. It is evident that proper ordinances and adequate supervision and enforcement are necessary if high standards of sanitation in eating and drinking establishments are to be reached and maintained.

RECOMMENDATIONS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO)

It is recommended that:

1. The Board of Commissioners of Cook County shall adopt the latest edition of the *United States Public Health Service Ordinance*

and Code Regulating Eating and Drinking Establishments, including the supplementary material in Section 9 of the 1943 edition, and shall provide for the enforcement of such regulations in all areas under its jurisdiction.

2. Municipalities not under the jurisdiction of the Cook County Department of Public Health shall adopt and enforce the provisions of the latest edition of the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments*, including the supplementary material in Section 9 of the 1943 edition.

3. The Cook County Department of Public Health and municipalities not under its jurisdiction shall be provided with a staff, adequately trained and sufficiently large properly to enforce the U. S. Public Health Service Ordinance. Staff requirements are discussed in Chapter 42.

4. The personnel employed by the Cook County Department of Public Health and by municipalities not under its jurisdiction shall be required to undergo an adequate inservice training program and frequent refresher training programs; further, that these training programs shall be co-ordinated whenever possible.

5. Training schools for eating- and drinking-establishment operators and employees shall be inaugurated by the county and the municipal health departments.

6. The Illinois Department of Public Health shall give advice, guidance, and technical assistance to the local health departments in regard to the sanitary control of eating and drinking establishments.

PROCESSED FOODS AND BOTTLED BEVERAGES

by *Ralph E. Tarbett, Harold Wainess,*
and *Douglas B. Morton*

THE SUPERVISION OF THE FOOD SUPPLY of a community in order that it may be kept safe for human consumption is an essential activity of national, state, and local governments. Local control activities generally include inspection of meat and meat products at slaughterhouses and packing plants not subject to U. S. Government inspection, of food-processing plants, and of wholesale and retail establishments.

FOOD INSPECTION SERVICES IN CHICAGO

Supervision over the food supply of Chicago is exercised by the Chicago Health Department through the Food Inspection Section of the Milk and Food Division. Authority for these control activities is contained in the Municipal Code of Chicago. The ordinances are general, rather than detailed, as is the ordinance for milk control. No code indicating satisfactory compliance is provided to supplement the various ordinances. Thus, interpretation of the ordinance for compliance is accomplished by each individual inspector. As a result, their interpretations lack uniformity.

The ordinances usually include a section on definitions, several sections on licensing procedures, a scale of fees, a section on general sanitary requirements, and inspection and penalty clauses.

PERSONNEL IN THE FOOD INSPECTION SECTION The section is under the direction of a graduate veterinarian who has been connected with the work for 36 years, including 4 years in charge of the section. His staff consists of 4 supervisors, 1 of whom has a professional degree, 13 inspectors assigned to slaughterhouses and packing plants, 10 of whom are qualified veterinarians, 2 inspectors assigned to the Fulton Market, 1 inspector assigned to shellfish control, and 19 gen-

eral inspectors assigned to wholesale and retail food establishments.¹ Of the 35 inspectors, 12 hold civil service appointments, 15 hold temporary appointments, and 8 are part-time temporary employees.

ACTIVITIES OF THE FOOD INSPECTION SECTION Table 56 shows the activities of the Food Inspection Section for 1944, the latest year for which figures are available. Exclusive of slaughterhouse inspec-

TABLE 56. ACTIVITIES OF THE FOOD INSPECTION SECTION, 1944

| <i>Types of Activity</i> | <i>Total</i> | <i>Wholesale Establishments</i> | <i>Retail Establishments</i> |
|------------------------------|--------------|-------------------------------------|----------------------------------|
| Inspections | 46,180 | 25,530 | 20,650 |
| Reinspections | 9,978 | 106 | 9,872 |
| Notices served | 6,023 | 80 | 5,943 |
| Abatements | 4,986 | 82 | 4,904 |
| Total | 56,158 | 25,636 | 30,522 |

tions, each inspector averages 9.5 inspections per day. Even if the inspector had no duties except routine inspections, this average indicates that approximately 40 minutes' time was available for each inspection, including travel time. However, since the inspectors have other duties, such as serving notices and attending hearings, the average time per inspection must be less than 40 minutes. Obviously, a proper inspection cannot be made in so short a time.

Estimates based on the number of inspections made and the estimated number of establishments requiring inspection indicate that approximately 1.5 inspections are made per establishment per year. Since the number of inspections include reinspections, evidently some establishments were not inspected during the year.

Federal government inspections of meat and meat products at packing plants is confined to plants which ship their products outside the state in which they are located. A considerable portion of the meats and meat products consumed in Chicago come from government-inspected establishments. Meat and meat products produced solely for local consumption are inspected by the Chicago Health Department. During 1944 this inspection service condemned 1,603,490 pounds of meat of the following types.

| <i>Type</i> | <i>Number of Pounds</i> |
|-----------------------|-------------------------|
| Calves | 294,170 |
| Cattle | 85,573 |
| Hogs | 1,217,921 |
| Lambs, Sheep, & Goats | 5,826 |

¹ Discussion of sanitary inspection services of retail eating and drinking establishments was presented in Chapter 14.

In the inspection of meat and meat products, the standards, rules, and regulations used by the health department are those set by the U. S. Bureau of Animal Industry.

Following the typhoid epidemic of 1924-25, which was attributed to oysters, the Chicago Health Department took an active part in the control over the sanitation of the shellfish industry developed by the U. S. Public Health Service. Since that time, permission to sell shipments of oysters and clams in Chicago is given only if the shipper's name is on the approved list issued by the U. S. Public Health Service.

In addition to slaughterhouse inspections the limited inspection staff available in 1944 found and condemned 447,012 pounds of food of the various types listed.

| <i>Type</i> | <i>Number of Pounds</i> |
|-------------------------------|-------------------------|
| Sausage | 166 |
| Poultry, live | 62,798 |
| Poultry, dressed | 17,994 |
| Fruits and vegetables | 31,550 |
| Fruits and vegetables, canned | 26,132 |
| Fish | 8,758 |
| Meats and fish, canned | 3,765 |
| Other canned foods | 180,098 |
| Not otherwise classified | 115,751 |

If in one year a limited inspection service was able to find and condemn as unfit for human consumption more than two million pounds of meat and other types of food, it may be assumed that adequate inspection services might have prevented much larger amounts of unfit food from reaching the consuming public.

COMMENTS

Proper control over foodstuffs and the sanitation of the establishments processing or marketing such foodstuffs are important functions which Chicago people expect and generally believe are maintained by its health department. The present limited inspection staff cannot carry out this function in a manner adequate for proper safeguarding of the public's health.

Inservice training and refresher courses for the inspection staff and educational programs in the field of sanitation for those engaged in processing and marketing of food are desirable.

Development of standard inspection forms, together with a manual of interpretations, would also be desirable for use in the inspection of food establishments such as bakeries, grocery stores, markets, and wholesale establishments. These forms should be similar to those now in use in milk and restaurant inspections.

RECOMMENDATIONS FOR PROCESSED FOODS

It is recommended that:

1. The Food Inspection Section shall be reorganized and staffed in accordance with the recommendations given in Chapter 42.
2. Inservice and educational programs of the type recommended in other sections of this report shall be provided.
3. Ordinances governing miscellaneous food inspections shall be more detailed in nature and standard inspection forms together with a manual of interpretations shall be adopted.

BOTTLED BEVERAGES AND BOTTLED-WATER PLANTS

The values of special waters—spring, naturally carbonated, and artificially carbonated—have been extolled throughout the ages. In 1767 Joseph Priestley, the famous English physicist, was the first to introduce carbon dioxide gas into water to produce a taste similar to that of natural carbonated waters. Thomas Speakman, in 1785, is credited with being the first person to introduce artificially carbonated waters to the United States. The industry has grown tremendously since then, and in 1942 there were more than 6,500 carbonated beverage plants in the United States with an annual income of approximately five hundred million dollars.

The importance of sanitation in the beverage and water industry can never be neglected. The principles of sanitation influence the design of plants, machinery, and operation procedures. Sound designs are only the beginning. They must be strengthened by regular cleaning and sterilizing procedures, which are particularly significant because the final product is usually not pasteurized or heated as are milk and milk products.

However, neither heat treatment nor pasteurization guarantees that the product will be free from contamination after processing. Safe and sanitary handling and storage are required throughout all subsequent operations, for bacteria grow in a great variety of products and under almost all conditions. The importance of the bottle-washing operation cannot be overlooked, and unless the proper com-

binations of time and temperature and concentrations of cleansing chemicals such as caustic alkali are used, bacterial contamination is highly probable.

The carbonated-beverage industry operates under a self-imposed sanitary code prepared by the "American Bottlers of Carbonated Beverages." This code is comprehensive, setting sanitation standards for building, equipment, methods, ingredients, and personnel. The association has also issued a bulletin in which the proper relationship of cleansing chemicals to time and to temperature is outlined. The procedure outlined in this bulletin has been adopted as the standard by all progressive bottling plants.

Micro-organisms that cause spoilage in bottled drinks sometimes have their origin in water, but more frequently in improper handling of raw materials and poor sanitary conditions within the plant. The need for proper supervision over the bottling industry is increasingly evident when it is realized that children and invalids consume a large portion of the bottled products. In 1942 the average per-capita consumption in the United States was estimated at 115 half-pint portions per year.

The fact that bottled beverages and waters are consumed practically as prepared at the plant makes it mandatory upon the manufacturer to prepare products that are above question in sanitary quality. The growth of bacteria, yeast, and molds leads to serious contamination of bottled beverages, which often causes spoilage and possibly outbreaks of disease.

At one time little attention was paid to the growth of micro-organisms in carbonated beverages. Research, however, in recent years has shown that bacteria, yeasts, and molds are capable of surviving such factors as carbonation, normal sugar concentrations, and normal acidity strengths. It was pointed out earlier that these contaminants are frequently due to improper handling of raw materials and poor sanitary conditions in the plant. Table 57, taken from J. F. Hale's article, "Irregularities in Bottled Beverages," *National Bottlers' Gazette*, July, 1941, indicates the ability of yeast to grow under various sugar concentrations without added acid or carbon dioxide.

Along with the growth of the carbonated-beverage industry in the last decade, progressive leaders have realized that the food business has certain obligations in regard to public health protection. With this in mind, the American Bottlers of Carbonated Beverages has set

TABLE 57. RATES OF YEAST GROWTH IN SUGAR SOLUTION
(YEAST PER CC.)^a

| <i>Incubation Time (n hours)</i> | <i>1 Percent Sucrose</i> | <i>5 Percent Sucrose</i> | <i>27° Baume (Syrup) 49.5%</i> | <i>32° Baume (Syrup) 59.1%</i> |
|--|------------------------------|------------------------------|--|--|
| Initial | 127,000 | 120,000 | 190,000 | 205,000 |
| 8 | 143,000 | 195,000 | 261,000 | 782,000 |
| 30 | 192,000 | 580,000 | 941,000 | 1,680,000 |
| 45 | 290,000 | 940,000 | 3,600,000 | 2,150,000 |
| 60 | 385,000 | 2,110,000 | 7,410,000 | 2,895,000 |
| 85 | 870,000 | 11,700,000 | 8,600,000 | 3,752,000 |
| 119 | 1,600,000 | 26,500,000 | 9,100,000 | 4,492,000 |
| 145 | 2,300,000 | 43,800,000 | 9,900,000 | 6,631,000 |
| 162 | 2,650,000 | 57,300,000 | 12,600,000 | 7,389,000 |

^a Incubated at 28° C—Solution tap water.

up a technical research and information section to keep abreast of current methods of proper sanitation.

In 1941 the American Bottlers of Carbonated Beverages published an educational bulletin (No. 1) that describes in detail the time, temperature, and percent causticity necessary for proper washing and sterilization of bottles. This bulletin has been followed by numerous others, as well as pamphlets and articles outlining methods of sanitation required to prevent growths of micro-organisms. All member plants of the American Bottlers of Carbonated Beverages are supposed to adhere to the principles outlined. The present survey in both Chicago and Cook County indicates that the majority of plants in this area are disregarding these rules of sanitation. A complete description of these violations will be found in this chapter.

The lack of suitable legislation covering the public health aspects of this important industry on both state and local levels is deplorable. Neither Chicago nor Illinois have modern ordinances on this subject.

The preceding statements should not be construed to give the impression that all bottling plants are insanitary. Of the plants surveyed, there were a few which adhered with diligence to the sanitary principles laid down by the American Bottlers of Carbonated Beverages. The fact that they form such a small minority makes conspicuous their efforts to comply.

The survey reports for Chicago and Cook County, excluding Chicago, are presented separately in this chapter. Included in these surveys are reports of plants where waters, both spring and "mineral," are bottled.

PLANTS IN CHICAGO Carbonated beverages only are bottled in 50 plants in Chicago and mineral and spring waters in 7 plants. Of these 7, 3 bottle both carbonated beverages and water. A random sample of 28 plants was selected for survey in February, 1947, in accordance with the procedure outlined by the U. S. Public Health Service.² Of the 28 plants, 22 bottled carbonated beverages only, 3 bottled carbonated beverages and water, and 3 bottled water only. The survey included appraisals of sanitation of all the methods used, from the initial preparation of the raw materials to the final bottled product.

The importance of the public health aspects of the production, distribution, and widespread use of these products becomes evident when it is realized that approximately 175,000,000 pints of beverages are consumed annually in Chicago.

Although a considerable number of plants are members of the American Bottlers of Carbonated Beverages, few of those surveyed complied with the excellent standards of their association. This association has prepared a score card giving a numerical weight to each item of sanitation, varying in proportion to the item's value as a sanitary measure. Therefore, if bottled beverages are produced in every respect according to these items of sanitation, their rating will be 100 percent. A rating of 90 percent is considered satisfactory. On this basis only 2 of the 28 plants surveyed received a sanitation rating of 90 percent or more.

Carbonated-Beverage Plants.—Dirty floors were noticed in 10 of the plants, and in 15 the walls and ceilings were badly in need of repair. In 10 plants the lighting was so poor that dirty walls and equipment were difficult to detect. In only one plant were the bottle washing and the bottle filling operations separated in order to eliminate any opportunities for the final product to become contaminated, particularly by flies.

Toilet facilities in 11 plants were either lacking, in need of repair, or dirty, and 24 of the plants lacked clean and adequate hand-washing facilities. Most of the toilet rooms opened directly into the bottling room, and at many plants the doors or partitions were not tight. In several of these plants common towels were in use. This practice is particularly dangerous, since such towels can be a vehicle for the spread of communicable diseases. In many of the plants per-

² Leslie C. Frank and others, *Methods of Making Sanitary Ratings of Milksheds*. Reprint No. 1,970 Public Health Reports (P. H. R., LIII [Aug. 12, 1938], 1386-89).

sonal cleanliness was neglected, and employees' clothes were dirty. In most cases employees were wearing their regular clothes and had not been provided with washable outer garments to be used only for plant duty. There was evidence of use of tobacco in rooms where the products were handled, which tends to promote careless handling methods and may promote spitting and the contamination of fingers and hands by saliva. Disease organisms present in saliva may then be transmitted to the product or utensils directly by fingers or indirectly by flies or vermin.

The Chicago municipal water supply is used as the water source for carbonated beverages in all cases. Types of treatment in use consist of combinations of pressure sand filters, stone filters, cloth and paper filters. A few plants utilize super-chlorination for bacterial control. Dechlorination is by means of charcoal filters. Such treatment is satisfactory, providing adequate maintenance and supervision of the equipment is carried on. Care should be used in storing and handling the cloth and paper filters to avoid contamination. The American Bottlers of Carbonated Beverages Sanitary Code specifies that records be kept of the operation of water-treatment equipment. In most plants this procedure was neglected.

Plants engaged in marketing distilled water also use the municipal supply. Distillation is accomplished by boiling at atmospheric pressure. If care is not exercised at this operation to be sure that the water in the distilling section cannot flood the condenser, the final product may be contaminated.

With few exceptions, top water is used in the washing and rinsing processes.

Several back-siphonage connections were noted at various plants. These consisted mainly of submerged water inlets to the bottle washers, water faucets below the overflow rim of sinks and lavatories, and in one case a direct connection to syrup lines for flushing purposes. The use of a hose, with the end submerged in the sink or pail, was observed in a number of instances.

Several cross-connections between the waste outlets from bottle washers and wash water discharge lines from the pressure filters connect directly to a sewer line. With such a connection, the possibilities exists for sewage to back up into these units if the sewers become plugged.

The flavor characteristics and food value of nonalcoholic beverages depend to a large extent on the types and amounts of sugar in

the product. In order to prevent spoilage and reduce the chances of communicable disease outbreaks, high bacteriological standards for sugar and syrups and scrupulous sanitation must be emphasized in the beverage industry. All ingredients must be free of both spoilage and pathogenic types of micro-organisms. Since the preparation of syrups is one of the most important operations in the beverage plant, both from the standpoint of sanitation and the control of concentration, it was surprising that the majority of syrup preparation rooms were in very poor condition from a sanitation viewpoint. The lack of covers on syrup tanks to prevent contamination from dust, flies, and vermin was evident. The methods used in handling, storage, and preparation of the ingredients were deplorable. Many of the syrup rooms did not have proper facilities for washing and bactericidal treatment of measuring graduates, mixing containers, spoons, and other utensils. Some plants did not have a sufficient supply of hot water for this operation. The practice of storing sugar directly on the floor was common. This practice is bad from the public health viewpoint, since it provides breeding and feeding harborage for rats, mice, and vermin. Lack of proper drainage in several of the preparation rooms made it impossible to clean the floor area.

Not all piping used to conduct ingredients was of a sanitary type which can be cleaned easily with a brush. The pipes should be connected with sanitary type fittings, and the individual pipes should be reduced to a length which will permit frequent dismantling and easy cleaning.

According to the regulations of the Illinois State Department of Agriculture, carbonated beverages are classified as a food. All equipment used in handling, processing, and storage of food must be cleaned thoroughly in order to eliminate any possible public health hazard. Table 58 is one recommended by the American Bottlers of Carbonated Beverages for the proper time, temperature, and causticity relationship in the bottle washers in order to obtain a clean "sterile" bottle.

Eleven of the twenty-eight plants surveyed were washing their utensils either at temperatures far below those recommended above or were using a low caustic concentration. Bottle-washing machines were operated over long periods without cleaning. This practice is insanitary, because the accumulation of waste material in the bottle washers tends to reduce the bactericidal efficiency of the caustic solution. Seven of the plants had no way of ascertaining proper

TABLE 58. RELATION OF CONCENTRATION OF CAUSTIC TO TIME REQUIRED TO KILL 99.9 PERCENT OF A MILLION SPORES OF BACTERIA^a

| CONCENTRATION OF CAUSTIC (In percentage) | KILLING TIME IN MINUTES | |
|---|-------------------------|-----------|
| | At 122° F | At 140° F |
| 1.0 | ... | 46.8 |
| 1.5 | ... | 20.4 |
| 2.0 | 41.7 | 11.7 |
| 2.5 | 27.6 | 7.8 |
| 3.0 | 19.8 | 5.7 |
| 3.5 | 15.2 | 4.0 |
| 4.0 | 12.4 | ... |
| 4.5 | 10.0 | ... |
| 5.0 | 8.2 | ... |

^a From *A-B-C-D-Educational Bulletin*, No. 1, August, 1929. Type of Spores not specified.

bottle-washing temperatures, since thermometers were either lacking or broken. Too much reliance was placed on the appearance of the washed bottle, and daily tests of alkali strength were not always made. Alkali test kits should be available at all plants.

Utensils and equipment which are constructed improperly or in need of repair cannot be cleaned satisfactorily. Cracks, chipped and rusted areas, and open seams in syrup tanks are ideal locations for bacterial growth. Three plants were found where wooden paddles are still in use.

The storage and handling of caps, corks, and other closures in dirty bins was very common. Caps, corks, and other closures were not stored in the containers in which they were purchased originally and were not kept in a clean, dry location and handled in a sanitary manner. The practice of fingering caps and corks is obviously dangerous.

Carelessness in the bottling operation results in the exposure of the finished product to infection and may easily nullify the effects of proper sanitation elsewhere in the plant. In only one plant were the bottles protected properly with overhead shields, from the bottle washer to the filler, in order to prevent contamination. Some plants were hand-capping their final product, and in some, corks were used, which allowed the pouring lip of the container to be exposed to contamination by handling. The lack of approved rat proofing was noted in many plants, in direct contradiction to the city ordinance passed in 1946, which requires all such structures to be completely rat proofed. Along with this, it was also noted that many plants did not have their trash and garbage stored in washable and covered containers.

Many of the plants were located in premises unsuitable for the packaging of a food product. The use of basements and improperly converted garages and similar buildings observed in the survey is a hazardous public health practice. The surroundings of nine of the plants surveyed can be described only as "filthy."

Table 59 shows the major sanitary violations found and the number of plants violating each item of sanitation.

TABLE 59. INDIVIDUAL VIOLATIONS OF MAJOR ITEMS OF SANITATION IN 28 PLANTS

| <i>Item of Sanitation</i> | <i>Number of Plants Violating</i> | <i>Item of Sanitation</i> | <i>Number of Plants Violating</i> |
|--|---|---------------------------|---|
| Floors | | Cleaning of equipment | |
| Pools | 18 | Dismantling | 23 |
| Walljoints | 4 | Daily | 21 |
| Cleanliness | 10 | Bactericidal treatment | 12 |
| Walls and ceilings | | Daily | 1 |
| Repair | 15 | Thermometers | 7 |
| Cleanliness | 11 | Temperature maintained | 11 |
| Doors and windows | 5 | Storage of containers | |
| Lighting | 10 | Protected | 6 |
| Ventilation | 1 | Above floor | 4 |
| Tanks covered | 13 | Handling of containers | 5 |
| Size of room | 4 | Handling of caps | 3 |
| Process separated | 24 | Storage of caps | |
| Animals in plant | 2 | In original containers | 11 |
| Condensation | 2 | Rat-proofing | 12 |
| Toilet facilities | 11 | Vermin control | 1 |
| Water supply | | Bottling | |
| Cross-connections | 7 | Mechanical | 1 |
| Adequacy | 2 | Condensation aprons | 3 |
| Handwashing facilities | 24 | In feed conveyor | 24 |
| Sanitary piping | 23 | Hand filling | 1 |
| Construction and repair of containers and equipment | | Capping | |
| Tanks | 4 | Mechanical | 5 |
| Valves | 1 | Lip protected | 3 |
| Paddles | 3 | Personal cleanliness | 7 |
| Bottles | 1 | Ingredients | |
| Waste disposal | | Proper handling | 5 |
| Trash covered | 16 | Stored above floor | 6 |
| | | Miscellaneous | |
| | | Vehicles | 2 |
| | | Surroundings | 9 |

Bottled Water Plants.—The average Chicagoan uses bottled water extensively, because of a variety of factors controlling the taste and turbidity of the Chicago municipal water supply. Of the many different brands of bottled spring and mineral water sold in Chicago, only seven are bottled in the city itself. The remainder are bottled in various other parts of the United States and shipped into

Chicago. Conditions in six of the Chicago plants at the time of the survey are discussed in the following paragraphs.

Carelessness in the handling of both the product and its containers was observed in five of these plants. The majority of defects were similar to those found in the carbonated beverage plants. The following points are particularly significant.

1. Cleaning of containers and equipment was haphazard, and it was noted in some plants that bactericidal treatment of the containers was neglected.

2. Corks that do not protect the pouring lip of the container were used, a dangerous public health practice, which can lead easily to contamination of the product.

3. The storage and handling of caps, corks, and other closures in dirty bins and boxes, unprotected from contamination by hands, flies, and dust were careless and obviously hazardous.

4. The present practice of shipping waters from points out of the city of Chicago in 30-gallon steel drums for rebottling presents a public health problem. These drums collect dirt and dust around the pouring hole which, unless sufficient precautions are taken, can easily contaminate the water. Some plants were using a spout for the handling of this water, but this spout was either of an insanitary type or was handled improperly and given no bactericidal treatment. When tank cars are used for transporting water from out-of-town points, care should be taken to provide proper cleaning and bactericidal treatment. Filling lines should be capped at all times, and chains should be provided to keep the caps from being lost or contaminated by being placed on the ground. The filling lines should be flushed before each use.

5. Four of the plants surveyed were in locations unsuitable for the bottling of water. One was in a dark basement lacking ventilation, and another in an old building with floors and walls that were impossible to clean.

6. In five plants, both toilet facilities and hand-washing facilities were either inadequate or dirty. In four cases the toilet opened directly into the plant.

7. Processing arrangements in these plants were not conducive to good public-health practice, since there was no separation between the washing and the filling operations.

8. Careless handling of filling spouts was evident in all the plants surveyed.

9. Sanitation inspections of bottling plants located outside Chicago have never been made by the Chicago health authorities. Failure to make such inspections is due to the lack of a proper city ordinance and the inadequacy of the present inspection staff.

The Board of Health has made bacteriological examination of all bottled water supplies, to determine the presence of coliform organisms. The examinations were made in accordance with the standard methods of water analysis of the American Public Health Association, and the results evaluated according to the *U. S. Public Health Service Drinking Water Standards* (1946). In 1944, 114 samples of bottled water were collected and examined, and 6 were positive for coliform organisms. In 1945, 83 samples of bottled water were examined, of which 8 were positive. Such numerous positive samples showing bacterial contamination confirm the need for control of the bottled-water industry.

DISCUSSION A brief history of the public health aspects of the beverage and bottled-water industry in Chicago indicates one of the reasons for the high incidence of insanitary conditions existing throughout the industry.

Before 1927 the regulations covering the manufacture of carbonated beverages were those set up in the Municipal Code of Chicago in connection with the issuance of licenses to manufacturers of these products. These regulations contained specific provisions for the cleaning and bactericidal treatment of beverage bottles, the sanitation of bottling rooms, and the standards of purity for the finished product.

As a result of a concentrated effort by some of the beverage manufacturers, an injunction to prohibit the city from enforcing these ordinances was granted against Chicago on July 15, 1927. This injunction directed in part that the city be enjoined and restrained "from interfering in any manner with the complainants in carrying on or engaging in the business of soft drink manufacture." Twelve years later, in June, 1939, the State Supreme Court upheld the right of the city to license soft-drink manufacturers as wholesale food establishments. The sections of the present wholesale food establishment ordinance, however, do not provide any specific requirements as to construction, sanitation, purity of product, or bottle-washing facilities.

In this city, where millions of dollars are spent for water safety and water purification, the lack of a specific regulation covering the

distribution of bottled water seems inconsistent. In order to afford the people of Chicago the necessary protection provided in other cities throughout the country, an ordinance should be adopted containing regulations for the manufacture of this product, establishing a standard of purity, and providing specific sanitary requirements similar to those recommended by the American Bottlers of Carbonated Beverages and now demanded of bottled milk plants.

RECOMMENDATIONS (CHICAGO)

It is recommended that:

1. An ordinance providing for a regulation of sanitation and distribution of all phases of the beverage and bottled water industry shall be adopted at once, similar to the Sanitary Code of the American Bottlers of Carbonated Beverages.

2. Properly trained and qualified inspection personnel employed on a civil service status shall be obtained to enforce this ordinance.

3. Frequent bacteriological samples of all bottled beverages and waters sold in Chicago shall be obtained and examined, and the finished product shall be required to comply with the *U. S. Public Health Service Drinking Water Standards* (1946).

4. Frequent routine inspections shall be made of all bottling plants selling their products in Chicago, whether located in Chicago or in other communities. In cases where the plants are located in distant communities, it is recommended that the respective state health departments be asked to make the necessary inspections and notify the Chicago Health Department of their findings.

5. Routine inspections of all sources of spring and mineral water sold in Chicago should be made at frequent intervals.

6. Operators of all bottling plants which are hereafter constructed, reconstructed, or extensively altered should prepare and submit plans to the Board of Health for approval before work is begun.

PLANTS IN COOK COUNTY (EXCLUSIVE OF CHICAGO)

The beverage bottlers in Cook County must conform to the Illinois sanitary food law. Their plants are inspected routinely by the Division of Foods and Dairies, Illinois Department of Agriculture. In Oak Park, Berwyn, and Cicero, inspections of bottling plants are made by local health department inspectors. There are approximately fifteen bottling establishments in Cook County exclusive of

Chicago, and the plants are distributed equally in three areas—south, west, and northwest of Chicago. Two of these plants prepare non-carbonated fruit juices for home delivery. Many other distributors in the county obtain bottled goods from large bottling plants in Chicago.

The carbonated-beverage bottling plants are attempting to apply and to meet the standards of the American Bottlers of Carbonated Beverages' Sanitary Code. In every one of the nine establishments visited, some new equipment was on hand and other equipment on order to replace old and worn-out equipment. Closer attention to some sanitary practices is necessary, however, in most establishments.

The following specific defects were observed in one or more of the nine plants visited.

1. Some concrete floors were cracked and eroded around bottling equipment, and in need of repair. Some floors in the bottling rooms were not properly cleaned of dirt and trash. Some syrup room floors were sticky and not cleaned properly.

2. Walls and ceilings in some plants were not kept clean or painted properly.

3. Distribution and amount of artificial light could be improved in most plants.

4. Syrup rooms were separate from the bottling process, but rooms were not all tightly constructed.

5. Several water filters were directly connected to the sewers. All toilets and lavatories had fixtures which would permit back-siphonage.

6. Most of the toilet rooms opened directly into the bottling room, and at several plants the doors or partitions were not tight.

7. One or more lavatories did not have individual towels and hot water. One toilet room was in a very unclean condition.

8. Some bottle washing and bottling equipment was old and ineffective. In one instance the bottles had to be forced into bottling position manually. New equipment on hand and on order will correct most of this trouble.

9. The fresh-fruit-juice plants are hand-filling and hand-capping bottles. One plant was washing bottles by hand. Some technical difficulties in the operation of these plants which need study and correction were noted.

10. Some syrup equipment was old and of improper construction, but new equipment was on hand or on order for most of it.

11. In re-equipping these plants, sanitary demountable pipe lines should be installed as far as possible.

12. Closer attention to operation and maintenance of water filters and sterilization equipment is necessary. The American Bottlers of Carbonated Beverages' Sanitary Code specifies records be kept of the operation of water clarification equipment.

13. Most bottle washers were not equipped with thermometers. Alkali test kits were not available at all plants. New bottle-washing equipment will be equipped with thermometers.

14. Daily tests of alkali strength in the bottle washers were not made. Too much reliance was placed on the appearance of the washed bottle only.

15. In some instances transfer of syrup preparations from mixing tanks to storage jars was performed manually instead of by means of suitable pipes.

16. Containers of crown bottle caps were sometimes open to dust and other contamination. Proper storage and handling of these caps should be arranged.

17. Covered refuse and trash containers are needed in some of the plants.

18. Closer attention is needed to assure thorough cleaning and bactericidal treatment of the syrup-making equipment, storage jars, hose and pipe lines, and bottling machinery. Some syrup hoses were old, the outer surfaces having been badly checked and cracked. Many of these lines are not removed for cleaning, but only flushed. In replacement of these lines, demountable sanitary piping should be used as far as practicable with rubber lines kept to short demountable sections. Bactericidal treatment should be with the proper causticity, time, and temperature recommended by the American Bottlers of Carbonated Beverages. These standards are not followed rigidly in all plants.

19. One plant was using a private water supply for bottling. Routine bacteriological analyses should be made at least quarterly by the health department.

20. Not all persons engaged in plant operations were wearing suitable working clothes. Many were working in their street clothes.

Improvement can be made in the facilities of the bottling plants and in attention to details of operation. Closer check on the filtration of water, the temperature and alkalinity in the bottle-washing machines, and the sterilization of equipment is needed. Over-all plant

sanitation and cleanliness should be improved. Every plant has on hand and on order new equipment necessary for improvement, and plant authorities expressed a desire to place a safe wholesome product on the market.

COOK COUNTY RECOMMENDATIONS (EXCLUSIVE OF CHICAGO)

It is recommended that:

1. The Board of Commissioners of Cook County shall adopt regulations similar to the Sanitary Code of the American Bottlers of Carbonated Beverages.

2. Communities in the county not under the jurisdiction of the Cook County Department of Public Health shall adopt regulations similar to those recommended for the county.

3. An inspection program shall be integrated with other food inspection programs of the Cook County Department of Public Health.

MOSQUITO CONTROL

by *Ralph E. Tarbett*

MOSQUITO-CONTROL MEASURES are undertaken in any area where mosquito-borne diseases are prevalent or where in the past mosquito production has been so intense as to retard the development of the area or to tend to reduce property values. In general, mosquito-control measures carried on for disease prevention are for the purpose of controlling malaria and dengue fever, the first being transmitted by a species of anopheline mosquito and the second by *Aedes aegypti*, which is also the carrier of yellow fever.

While the anopheline mosquito is found in many parts of the United States, it does not necessarily indicate either that malaria is present in the area or that the disease will spread if infection is introduced.

In the northern states mosquitoes are generally considered a pest rather than a health problem. This attitude is not entirely correct, as it is well known that sleeping sickness in horses (equine encephalomyelitis) is transmitted by mosquitoes common to the northern states and is transmissible to human beings. An epidemic of disease among horses and mules occurred in northern Illinois in 1938; in eastern Massachusetts, in 1939, an epidemic among horses spread to human beings, and 38 persons died from the disease. This disease has also occurred in the north central states and in California. Mosquitoes, therefore, in any part of the United States should be considered as factors in the dissemination of disease and therefore a health problem.

Mosquito control in the northern part of the United States, however, has been undertaken generally from the pest-control standpoint and for the purpose of offsetting the bad effects upon business and property values in the area due to their prevalence. In some of the states this control is carried on under district organizations established for the purpose under state enabling acts.

MOSQUITO ABATEMENT DISTRICTS

Illinois has an act entitled "Mosquito Abatement Districts," which was approved July 7, 1947.¹ This act provides for "the organization, operation, and dissolution" of districts and provides for tax levies and collections and disbursement of taxes collected. Under this act the tax levy shall not exceed one half mill per annum on each dollar of taxable property within the district. This tax is over and above any tax limitations for general purposes. A board of unpaid trustees holding office for four years (individual terms staggered) and appointed by the county judge, or judges if the district includes parts of two or more counties, directs the affairs of the district. Under this authority two mosquito-abatement districts have been organized in Cook County, one the Des Plaines Valley Mosquito Abatement District (comprising the townships of Oak Park, River Forest, Proviso, and Riverside) and the North Shore Mosquito Abatement District (comprising the townships of New Trier, Niles, Evanston, and part of Northfield). Good control over production of mosquitoes within the districts is maintained. At times, however, flights of mosquitoes into the areas from uncontrolled areas adjacent to and outside the districts occur. No other mosquito abatement activities are carried on in the county.

In 1928, before the formation of the two mosquito-abatement districts, the Chicago Sanitary District conducted a large mosquito-abatement program. During this period the Skokie marshes were drained, and a considerable amount of drainage work was carried on in other parts of the area, particularly along the Des Plaines River. All such work was held to be "ultra vires" by the courts, and consequently after 1928 no further mosquito-abatement work was undertaken by the Sanitary District of Chicago.

TYPES OF MOSQUITOES

Several species of mosquitoes are native to Cook County, but of these only two are particularly important from the pest standpoint: (1) *Culex pipiens* and (2) *Aedes vexans*.

C. pipiens are often referred to as domestic mosquitoes, since they breed in the water collections near human habitations and are vicious biters both indoors and out. This mosquito prefers to breed in polluted- rather than clean-water areas. The eggs are deposited on

¹ *Laws of the State of Illinois* (55th General Assembly), p. 694.

the surface of the water, whether in small containers or in larger bodies of water. In the Chicago region this specie of mosquito may have six broods per year, and the production may be as great as two million mosquitoes per acre of water surface per brood. Since this type of mosquito deposits its eggs on the surface of the water, the eggs do not retain their vitality throughout the winter months, and the mosquitoes must hibernate during this period of the year in order to perpetuate themselves. It has been assumed generally that the flight range of this type of mosquito is short and that its biting activities are confined to an area within a relatively short distance from its breeding place. Experiments conducted within Cook County, however, have indicated that the *C. pipiens* may fly a number of miles and be troublesome at some distance from its breeding place.

A. vexans, sometimes known as the wild variety of mosquito, is a member of the flood-water group, that is, the eggs are deposited in dry depressions and hatch when these depressions become flooded. Its breeding places in Cook County are in the marshes and in streams which are rather narrow. Since the eggs are deposited in dry areas and remain dormant until these areas are flooded, the mosquitoes are able to resist winter temperatures and breed early in the spring. *A. vexans* is an outdoor biter, rarely going inside habitations. It is particularly troublesome on porches, in yards, and in recreational areas during the summer. Studies in this area have indicated that three broods per season may be expected and that the production per acre for a narrow stream area may be as high as a million per acre per season and for marsh areas from nine hundred thousand to one million per acre per brood. This mosquito has a rather long flight range and may be troublesome for distances up to fifteen miles from its breeding place.

Three types of mosquitoes breed in woodland pools and may be extremely troublesome in their vicinity. These types, however, have only one brood per year, and their pestiferous activities are greatly limited.

Two species of the *Anopheles* are found in the Cook County Area. These mosquitoes are not produced in sufficient quantities to be a great health hazard. It should be borne in mind, however, that if persons infected with malaria come into an area where the *Anopheles quadrimaculatus* is prevalent there is always the possibility of a flare-up of the disease.

To give relief from pest mosquitoes to the metropolitan districts

of Chicago and its adjoining recreational areas, control activities extending for a distance of approximately fifteen miles beyond these areas were necessary. For this reason, the county commissioners of Cook, Du Page, and Lake counties appointed a Tri-County Mosquito Control Committee in 1939. The chairman of the board of trustees of the Des Plaines Valley Mosquito Abatement District was made chairman of the tri-county committee. The work was carried on under the immediate supervision of the engineer of the Des Plaines Valley Mosquito Abatement District.

It was expected at that time that the Federal Works Progress Administration would co-operate with the three counties in establishing a tri-county mosquito control project. Although this co-operative project was discontinued when WPA activities were terminated, it did progress to a point at which a complete survey of mosquito-production areas had been made and the mosquito prevalence determined for each township in the three counties and for Chicago. The information obtained is now available and can be made the basis for the establishment of any new abatement districts within Cook County or the adjoining counties of Lake and Du Page.² The survey showed that the total area of all breeding places within Cook County was 20,774 acres, approximately one-fifth within Chicago city limits; 80 percent of the mosquito breeding area within the city was located in the southern section, mainly in the townships of Lake, Hyde Park, and Calumet. Estimates based on survey findings indicated a total mosquito production of 66,698,000,000 in 1940. Of this total 24 percent, or roughly 16 billion, were produced in the three Chicago townships. Forty-eight percent of the breeding places within the county are located in 10 southern townships (including these 3),³ and 49.6 percent of the total mosquito production in the county occurs within this area.

DES PLAINES VALLEY MOSQUITO ABATEMENT DISTRICT

The Des Plaines Valley Mosquito Abatement District was established in 1928.⁴ There has been little change in the organization since its establishment insofar as the chairman of the board of trustees and

² Works Progress Administration. *Report upon Mosquito Control in Cook, Du Page, and Lake Counties, Illinois*, Chicago, sponsored by the Tri-County Mosquito Control Committee, 1941.

³ Bloom, Bremen, Calumet, Hyde Park, Lake, Orland, Palos, Rich, Thornton, and Worth.

⁴ Des Plaines Valley Mosquito Abatement District, *Annual Report*, Lyons, Ill., 1941.

the sanitary engineer in charge of operations are concerned. The sanitary engineer is an authority on mosquito control, and before his employment by the district he had had ten years' experience in sanitary engineering and public health work, six of these years in connection with mosquito control under the direction of the U. S. Public Health Service.

The annual tax levy makes approximately sixty thousand dollars per year available to the district. Expenditures are in the neighborhood of \$45,000. Of this amount approximately 30 percent is expended for construction work, ditching and the like, and 70 percent for maintenance and control measures.

The district maintains a staff of 10 permanent employees, increased for the duration of the mosquito season to 30, including 1 engineer and 1 entomologist. The habits and the characteristics of mosquitoes and methods for more economical mosquito control are studied constantly. The district includes considerable areas of marsh and swamp land which require heavy equipment for ditching and oiling. Special oiling equipment has been developed for use in the work.

NORTH SHORE MOSQUITO ABATEMENT DISTRICT

The North Shore Mosquito Abatement District was established in 1927 and began operations in 1928. The present superintendent has been in charge of the work since 1942. He was a member of the board of trustees from 1932 to 1942. His training in mosquito control has been gained during his rather long connection with this particular project.

The permanent force consists of superintendent, foreman, chief inspector, secretary, and 6 to 10 laborers. During the mosquito season the force is increased to about 30. The secretary, who has been with the district since 1928, has been trained in mosquito identification and is responsible for this part of the work.

The yearly appropriation is \$46,000, or about 95 percent of the tax levy. Yearly expenditures vary from \$35,000 to \$40,000.

The district has few undrained swamp areas, so that large ditching and spraying equipment is unnecessary. Such ditching activities as are needed are carried on by hand during the off season. Mosquito catching and identification of species are carried on intensively throughout the season. Studies are constantly made in connection with methods for more efficient and economical control.

SUMMARY

The mosquito problem in Cook County is not at present a health problem insofar as malaria is concerned. The prevalence of mosquitoes, however, has some health significance and should receive the attention of the health authorities.

Legislative authority permits the establishment of mosquito abatement districts and their financing through special taxation. Two such districts have been set up and are functioning satisfactorily. Full control in these districts is limited to some extent because of flights of pest mosquitoes, principally *A. vexans*, into the control areas from outside breeding places two to three times each season. Relative freedom from mosquitoes in the Chicago metropolitan area and the near-by recreational areas would require control measures in all townships except the seven west of the extended Du Page County line.

Data as to the location and character of breeding places, species of mosquitoes, and methods of controlling production were obtained in detail in 1940. These data are available for use in the preparation of estimates for control either on a county-wide basis or on the basis of township groups within the county, including Chicago.

RECOMMENDATIONS

It is recommended that:

1. The engineers of the Cook County Department of Public Health, the Chicago Health Department, and the Des Plaines Valley and North Shore Mosquito Abatement Districts shall bring up to date the information for Cook County obtained in 1940 and make definite recommendations relative to mosquito control in the county or any part thereof and that the above agencies shall urge that control measures be instituted wherever conditions warrant.

2. Consideration shall be given to increasing the area of the existing abatement districts, particularly the Des Plaines district, to include the area in the southern section of the county and to forming new abatement districts in other parts of the county if necessary.

SANITATION INSPECTION SERVICES

by *Gordon E. McCallum*

VARIOUS MUNICIPAL DEPARTMENTS carry on inspectional services for the purpose of obtaining information regarding conditions in one or more specific fields. This information may be used as a basis for granting or withholding a license, determining the quality of a product, ascertaining the performance of a piece of work, and in numerous other ways. A department of health conducts inspectional services largely for the purpose of ascertaining that certain establishments or facilities are maintained and operated in accordance with specified standards of sanitation. These various phases of environmental control are often referred to as community sanitation activities.

The inspection services, such as the sanitary control of milk and food and the sanitation of housing, which are a part of definite control programs, are discussed in the special chapters dealing with these programs. Certain other phases of environmental sanitation, although vital to the health program of a community, cannot be classified readily under specific control programs. Activities of this type are discussed in this chapter in relation to the various municipal bureaus responsible for carrying on the work.

Prior to January 9, 1941, in Chicago, these activities were conducted by three sections of the health department.

ACTIVITIES TRANSFERRED FROM DEPARTMENT OF HEALTH TO
DEPARTMENT OF BUILDINGS

The three sections: (1) Community Sanitation; (2) Plumbing and New Buildings; and (3) Heating, Ventilation, and Industrial Sanitation (formerly under the Division of Educational and Environmental Sanitation of the Chicago Health Department) have been transferred in recent years to the Department of Buildings. These transfers were effected in accordance with recommendations contained in "A Report on the Regulatory Inspectional Services of the City of Chicago

and a Plan to Simplify Procedures," which was prepared by the staff of the City of Chicago Budget Survey Committee. The reasons given for the transfers were (1) to expedite the issuance of building permits and (2) to co-ordinate the activities of inspectors in related fields. In general, the principal functions of these former sections of the health department which are now bureaus in the building department have not changed materially. A few new activities have been added, and certain former activities have been discontinued. The ordinances which these bureaus enforce are essentially the same as they were when the work was carried on under the health department. In most instances they have been amended by placing the responsibility of enforcement with the commissioner of buildings instead of the Board of Health. In some cases enforcement is a joint responsibility of the commissioner of buildings and the president of the Board of Health.

BUREAU OF PLUMBING INSPECTION

The Plumbing and New Building Section of the Chicago Health Department was transferred to the Department of Buildings and established as the Bureau of Plumbing Inspection by the annual appropriation bill of January 9, 1941. After an inquiry by the commissioner of buildings and recommendations by the corporation council, the Chicago City Council, on January 27, 1941, passed a number of amendments to several sections of Chapters 9, 13, and 82 of the Municipal Code of Chicago which were considered necessary in connection with the transfer of plumbing inspection to the Department of Buildings.

While in the health department the Plumbing and New Buildings' Section was charged with the responsibility of reviewing plans for all plumbing installed in new and remodeled buildings. In addition, it conducted cross-connection surveys in hospitals, industries, high buildings, and other places in which conditions conducive to contamination of the public water supply are most likely to exist. The surveys were discontinued by the health department about February 1, 1941, when plumbing inspection was placed in the Department of Buildings. After 1941 the Department of Public Works (water department) was the only city agency that conducted cross-connection surveys, an activity of long standing in this department. Authority for all work of the Bureau of Plumbing Inspection is contained in the plumbing code adopted August 30, 1939, with the exception of the inspection of domestic noninstantaneous and automatic water

heaters and the collection of fees in connection therewith. These two services are authorized by the building code.

The annual appropriation ordinance of 1946 provides a budget of \$122,670 for the bureau, which is derived from the water fund. The positions and salaries provided in the appropriations ordinance of 1946 are as follows: plumbing inspector in charge, 1, \$5,622; supervisory plumbing inspector (especially assigned), 1, \$5,406; supervisory plumbing inspector, 1, \$5,406; plumbing plan examiner, 2, \$3,978; 20 plumbing inspectors as needed at \$409.50 per month. Of the 25 positions, 21 were occupied in June, 1946. Three positions for plumbing inspectors at annual salaries of \$4,914 each and one position for a plumbing plan examiner at \$3,978 were unfilled. In addition to the personnel just listed, the bureau has four drain inspectors on loan from the Bureau of Sewers of the Department of Public Works.

The work of the bureau now consists of the examination of plans and field inspections in connection with building permits for new construction, remodeling operations, and inspections in response to complaints. Routine inspections of plumbing in existing buildings are not made by the bureau.

In 1945 the inspections made totaled 25,531. The average cost per inspection was about \$3. Connections possibly permitting backflow, interconnections, and cross-connections are reported to be searched for in the examination of plans and in the inspection of buildings for other purposes. Surveys or inspections are not made on a routine basis, however, to discover these conditions. Some inspectors, but not all, have received special training in the detection of these defects. The plumbing laboratory maintained by the Department of Public Works (water department) is always available to the inspectors, who may attend lectures and demonstrations whenever they wish. The bureau provides no programs of inservice training.

When discovered, violations of the plumbing code are handled by serving a notice on the owner of the building. A specified time limit for making the correction is usually given. If no corrections are made by the end of the specified time period, the bureau initiates action in municipal court. There is considerable evidence that stronger support by the courts would facilitate enforcement of and respect for the code.

Ordinarily, backflow conditions and cross-connections discovered by the inspectors are not reported to the health department. A report

is made only upon request and then usually in cases investigated at the instance of the health department.

The plumbing inspection bureau has no program, educational or otherwise, for its personnel for the detection, prevention, or correction of backflow conditions affecting the public water supply except what may be accomplished in connection with inspections and review of plans of new installations for the issuance of building permits and by the discovery of defects when responding to complaints.

OTHER AGENCIES CONDUCTING PLUMBING INSPECTIONS

Two other agencies, in addition to the Bureau of Plumbing Inspection, also conduct plumbing inspection. The Plumbing Section of the Division of Water Pipe Extension of the Department of Public Works is responsible for the plumbing system between the water main in the street and the faucet at the fixture, but normally only inspects the plumbing on new and reconstructed buildings from the water main in the street to the control valve in the building. The Drain Pipe Inspection Section of the Bureau of Sewers inspects the drainage system from the basement of the building to the drain in the street. The Bureau of Plumbing Inspection in the Department of Buildings is responsible for the remainder of the plumbing in the building.

Although water piping in new or reconstructed installations between the control valve and consumer's tap is not the responsibility of the Bureau of Plumbing Inspection of the Department of Buildings, the bureau inspects such piping. This work of plumbing inspection was transferred from the Department of Public Works to the Department of Buildings by authority of the Chicago City Council, February 7, 1946.¹

COMMENTS ON PLUMBING INSPECTION

Plumbing inspection, as usually conducted, and its relation to health are not in general well understood by the public. When water-carriage systems of waste disposal for buildings first came into being, many believed that communicable diseases were disseminated by sewer gas, hence inspections of plumbing installations were made primarily for the purpose of determining that joints were tight and

¹ The activities of the Plumbing Section of the Division of Water Pipe Extension and the Drain Pipe Inspection Section of the Bureau of Sewers are described in Chapters 2 and 5.

that the system was functioning so as to prevent the escape of objectionable gases and odors. This objective seems to be the basis for much of the plumbing inspection work as it is carried on today.

In the early days of plumbing inspection little or no attention was given to the possibility that waste water might find its way back into the drinking-water piping system or to the conditions under which backflow might occur. Although this danger has been understood by public-health and water-work officials for many years, it was not recognized generally by the public. However, the 1933 outbreak of amoebic dysentery in Chicago did add to the public's understanding of the problem here. Since that time exhaustive studies have been devoted to the development of devices and methods for preventing the backflow of sewage or contaminated water into the potable water-supply system.

The greatest danger of faulty plumbing is the creation of a condition by which waste water or sewage may be admitted to the potable water-supply system. While, in general, plumbing codes now contain requirements about backflow prevention, they are limited to the activities usually defined as "plumbing." Unfortunately, however, this definition frequently limits plumbing to the piping carrying drinking and waste water, together with all necessary fixtures and appurtenances. This definition may be interpreted to exclude piping used in furnishing water for air conditioning, manufacturing processes, and other nondomestic uses, with the result that such piping may not be subject to plumbing inspection. This distinction between different types of building piping systems, each of which is connected to the municipal water system, appears to be based on the fact that a different trade group installs each type. To the health and water-works official there is no distinction, since the hazards incident to improper piping systems may be as dangerous in one case as in the other. A public water-supply system is defined by the *U. S. Public Health Service Drinking Water Standards* as follows: "The water-supply system includes the works and auxiliaries for collection, treatment, and distribution of the water from the source of supply to the free-flowing outlet of the ultimate consumer."

The Section on Plumbing Inspection of the Division of Water Pipe Extension of the Department of Public Works is the only agency which has a program for the discovery and correction of defective piping in existing installations as it relates to water safety (i.e., protection of the drinking-water supply). The Chicago Health Depart-

ment at one time carried on an intensive and nationally recognized program in this field. This activity had to be discontinued by the health department, however, at the time plumbing inspection was transferred to the building department. It has never been undertaken by the building department.

There is some question as to whether or not the present staff of the Bureau of Plumbing Inspection of the Department of Buildings is adequate to handle more than the inspection of plumbing in new installations, since this activity seems to occupy all the inspector's time. It is also questionable whether all its inspectors are qualified to detect defects in complicated water-piping systems. This task is more difficult than the usual type of plumbing inspection, which as a rule involves only quality and type of material and workmanship.

The inspection of a building piping system to determine just what will take place under a given set of unusual circumstances requires not only special training in the technique of making such an inspection but also a knowledge of such basic sciences as physics and hydraulics. When learning his trade a plumber does not necessarily receive this type of training, and consequently without additional instruction he is usually not qualified to perform comprehensive surveys of complicated piping systems.

The inspectors in the Division of Water Pipe Extension are reported to have been trained by sanitary engineers and are presumed to be well qualified for the work in which they are engaged. The water department has a very definite interest in plumbing as it relates to water safety. Consequently, it seems desirable that the Division of Water Pipe Extension continue its work in connection with surveys of existing plumbing installations. It appears that with two departments of the municipal government engaged in plumbing inspection there is some duplication of work. It would seem desirable, therefore, that all plumbing inspection should be administered by the city department which possesses responsibility and the means of remedying defects.

It is becoming recognized generally that all plumbing inspection should be under the general direction of a professional public health engineer. This condition existed in the plumbing inspection bureau when it was in the health department. It does not, at this time, have that advantage in the building department.

The Bureau of Plumbing Inspection of the Department of Build-

ings now has but one plumbing plan examiner, and the volume of work is such that at least three are needed. It is of interest that this position—one of the most important in the bureau—carries a salary of only \$3,978 per year, whereas that of plumbing inspector pays \$4,914 per year.

The plan examiner may be an engineer or at least must be trained to read plans and be thoroughly familiar with the municipal code requirements in this field. He need not necessarily be associated with the plumbing trade. This factor may explain the discrepancy in salary.

ESTABLISHMENT OF THE BUREAU OF HOUSING INSPECTION

The personnel comprising the Section on Community Sanitation of the Chicago Health Department were transferred to the Department of Buildings and there established as the Bureau of Housing Inspection by the annual appropriation ordinance of January 9, 1946.

This action was taken by the Chicago City Council primarily as the result of a recommendation contained in the 1945 report of the City of Chicago Budget Survey Committee which stated that:

The entire present responsibility of the Section on Community Sanitation in the Board of Health as it applies to residential units and their surroundings or to conditions in places of employment, should be transferred with the necessary personnel to the proposed Department of Buildings and Housing Inspection and there operated as the Bureau of Housing Inspection.

On January 15, 1946, the corporation council, in a communication to the city council, called attention to the ordinance passed on January 9, 1946, which integrated inspection work in the building department, pointed out the necessity of amending various sections of the code which referred to the work, and transmitted drafts of suggested ordinances for consideration. On January 30, 1946, the city council by unanimous consent dispensed with committee consideration and passed unanimously the ordinances recommended by the corporation council.

AMENDMENTS IN MUNICIPAL CODE OF CHICAGO

Table 60 indicates the chapters and sections of the Municipal Code of Chicago which were amended and the subjects involved, together with the municipal departments responsible for enforcement and

the conditions under which inspections are required or conducted.

It will be observed that the Board of Health and the commissioner of buildings have joint responsibilities in the enforcement of the code with respect to ten of the twenty-two subjects included in the amendments contained in the ordinance enacted January 30, 1946, the Board of Health being relieved of all responsibilities in connection with the other twelve subjects. For example, Sections 107.1-3 and 107.1-8 of the code relating to barber shops were amended requiring the commissioner of buildings as well as the president of the Board of Health to make investigations in connection with license applications and to cause periodic inspections to be made. Chapter 157 pertaining to swimming pools was amended, however, by striking out the words "board of health" and inserting in lieu thereof the words "commissioner of buildings" as they appeared in Section 157-2 and 157-8, thus relieving the Board of Health of all responsibility, including the sanitation and safety of swimming pools.

The general activities of the Bureau of Housing Inspection in the Department of Buildings are similar to those of the former Section on Community Sanitation in the Chicago Health Department. From the public health point of view, the most important work of the new bureau is that which is concerned with lighting, ventilation, water supply, waste disposal, and adequate housing facilities. Most of its inspectional work is in connection with license applications and complaints. The only routine inspectional work being carried on at this time is in conjunction with a housing survey which was instituted in June, 1945.

ACTIVITIES OF FORMER SECTION ON COMMUNITY SANITATION
Table 60 lists the activities of the former Section on Community Sanitation of the Chicago Health Department for the year 1940.² Although this information does not include recent activities, it does give some indication of the general types of work which are being carried on by the body now responsible for most of these functions, i.e., the Bureau of Housing Inspection. The various subjects listed in Table 61 reveal the multiplicity of activities, a number of which have little relation to each other and are not closely associated with public health. Complaint inspection and reinspections with regard to housing constituted the greatest number of inspections related to one subject dur-

² The latest annual report of the Chicago Board of Health at the time of the Chicago-Cook County Health Survey was 1940.

TABLE 60. MUNICIPAL CODE AMENDMENTS

| CHAPTER | MUNICIPAL CODE | | INSPECTION IN ACCORDANCE WITH | | | | ENFORCEMENT BY | |
|---------|----------------------------------|---|--------------------------------------|----------------------|----------------------|-----------------|---------------------------|-----------------|
| | Sections Amended | Subject | New License | Application; Renewal | Complaint or Request | Periodic | Commissioner of Buildings | Board of Health |
| 105 | All referring to Board of Health | Animal care and sale | Yes | No | Yes | No | x | |
| 107.1 | 107.1-3 107.1-8 | Barber shops | Dept. of Buildings & Board of Health | No | Yes | Yes | x | x |
| 109 | All referring to Board of Health | Bill posting | Yes | No | Yes | No | x | |
| 112 | All referring to Board of Health | Brick yards | Yes | No | Yes | No | x | |
| 118 | 118-9 | Dispensaries | Board of Health | No | Yes | No | x | x |
| 124 | 124-11, 124-13 124-17 | Extermination by fumigation | Board of Health | No | Yes | No | x | x |
| 126 | 126-2 | Feed dealers | Yes | No | Yes | No | x | |
| 128 | All referring to Board of Health | Florists | Yes | No | Yes | No | x | |
| 135 | All referring to Board of Health | Hardware stores and paint stores (retail) | Yes | No | Yes | No | x | |
| 136 | 136-13 | Homes (children) | Board of Health | No | Yes | No | x | x |
| 136.1 | 136.1-14 | Homes (nursing) | Board of Health | ? | Yes | Board of Health | x | |
| 137 | 137-18 | Hospitals | Board of Health | No | Yes | Board of Health | x | x |
| 144 | 144-6.1 | Laboratories | Board of Health | No | Yes | Health | x | x |
| 157 | 157-2; 157-8 | Swimming pools | Yes | No | Yes | No | x | x |
| 158 | 158-11 | Nurseries for children | Board of Health | No | Yes | No | x | x |
| 165 | 165-9 | Roofers & mfrs. of roofing materials | Yes | No | Yes | No | x | |

| CHAPTER | MUNICIPAL CODE | | INSPECTION IN ACCORDANCE WITH | | | ENFORCEMENT BY | |
|---------|--|---------------------------|-------------------------------|-----------------------------|-----------------------------|-----------------|--|
| | <i>Sections Amended</i> | <i>Subject</i> | <i>New License</i> | <i>Application; Renewal</i> | <i>Complaint or Request</i> | <i>Periodic</i> | <i>Commissioner of Buildings</i> x also Dept. of Sts. & Electricity <i>Board of Health</i> |
| 167 | 167-2; 167-4; 167-5; 167-38 167-12 | Scavengers | Yes | No | Yes | No | |
| 168 | 168-8; 168-20 | Secondhand dealers | Yes | No | Yes | No | |
| 178 | 178-3 | Tobacco dealers | Yes | No | Yes | No | x |
| 179 | 179-3 | Trailer camps | Yes | Yes | Yes | No | x |
| 96 | 96-6; 96-8; 96-10; 96-11; 96-22; 96-23; 96-27 | Hotels and lodging houses | Yes | No | Yes | No | x |
| 99 | 99-1; 99-2; 99-27; 99-30; 99-34; 99-36; 99-37; 99-40; 99-47 | Nuisance | ... | ... | Ye | ... | x |

TABLE 61. ACTIVITIES OF COMMUNITY SANITATION SECTION, 1940^a

| | |
|---|--------|
| Complaint inspection and reinspections | |
| Lack of heat | 2,289 |
| Water supply and sewage disposal | 4,217 |
| Accumulation of garbage or refuse | 3,413 |
| Drainage | 2,752 |
| Vermin or insects | 765 |
| Rats | 1,921 |
| Housing | 13,335 |
| Domestic animals | 1,180 |
| Odors, fumes, or dust | 1,723 |
| Weeds | 105 |
| Miscellaneous inspections and reinspections | |
| Not otherwise classified | 474 |
| License | 1,786 |
| Mortuary | 59 |
| Fumigation | 182 |
| Public conveyances | 1,207 |
| Canvass inspections and reinspections | |
| Weeds | 14 |
| Stables | 18 |
| Privy vaults | 5 |
| Public comfort stations | 242 |
| Action in regard to violations | |
| Notices served | 7,926 |
| Abatements secured | 4,672 |
| Warning letters sent | 2,513 |
| Hearing board cases called | 549 |

^a Chicago Health Department, *Annual Report*, 1940.

ing the period covered by the report. Following are the total number of inspections and reinspections of all types made by the community sanitation section during the years 1941 to 1945, inclusive:

| Year | Number of Inspections |
|------|-----------------------|
| 1941 | 39,914 |
| 1942 | 80,132 |
| 1943 | 56,728 |
| 1944 | 64,689 |
| 1945 | 63,567 |

The number of inspections made in 1945 does not include those connected with the current housing survey. A large proportion of these inspections are reported to have been made in response to complaints. On the basis of sampling, about 10 percent of these complaints allege nuisance conditions which are not violations of the municipal code. In case violations are found, several reinspections may be made before the condition is corrected or the case disposed of otherwise.

An unpublished report by the Board of Health on activities of the Section on Community Sanitation in 1943 listed the following activities and establishments as among those which are inspected in connection with license applications.

| | |
|---------------------------------|--|
| Barber shops | Nurseries |
| Bill posters and sign painters | Scavengers |
| Brick or clay products—yards | a) night soil |
| Catch-basin or sewer cleaners | b) offal |
| Dealers in birds, dogs, or cats | c) private |
| Dog kennels or catteries | Secondhand bottle dealers or exchanges |
| Factories or workshops | Swimming pools |
| Florists | Tannery wool-pulling establishments |
| Homes | Trailer camps |
| Hospitals | Undertaking establishments |
| Laboratories | Veterinary hospitals |
| Laundries | Wearing apparel shops |
| Massage parlors | |

ACTIVITIES OF PRESENT BUREAU OF HOUSING INSPECTION ³

During the period January to June, inclusive, of 1946 the bureau conducted 12,834 original inspections and 13,000 reinspections regarding housing complaints. This total does not include the inspections made in connection with the housing survey. During this same period it also conducted 590 nuisance-complaint inspections, 1,305 license-application inspections, and 1,031 law-case inspections. Of 29,427 inspections, 29,058 were in response to complaints, license applications, or in connection with law cases. This total reveals that an extremely high proportion of inspections resulted from outside request. Little opportunity thus remained for the bureau to plan and carry out a program of periodic inspections.

ADEQUACY OF INSPECTIONS Inspections are required by the code in all cases for the licensing of new establishments, but are not required in all instances and evidently are not usually made in connection with license renewals. Lack of recently published annual reports and the inadequacy of both building- and health-department records—and sometimes the difficulty of locating them—made it extremely hard to ascertain the dates of last inspection of many places

³ The activities of this bureau in relation to housing, which are reported to be one of its major responsibilities, are discussed in Chapter 22.

with any reasonable degree of accuracy. It was particularly difficult if the last inspection had been made more than two years previously. For example, Section 29-36 of the Municipal Code of Chicago requires that a permit be obtained from the commissioner of buildings for the dumping of refuse anywhere within the city. No records were available in either the health department or the building department as to the most recent date of inspection of any dump in Chicago. Nor was it possible to determine the most recent date of issuance of the permit for the operation of any particular dump. It was conceded that no inspection of dumps had been made for some time. Records are not available which show dates of the last inspection of the four licensed swimming pools in the city. Neither could any information be found to indicate that sanitary inspections are made in connection with the renewal of licenses for the operation of the four licensed trailer camps in the city, despite the fact that inspection is required by Section 179-3 of the Municipal Code of Chicago.

As nearly as can be determined, no attempt is made to discover and inspect places or establishments which should be, but are not, licensed. It seems rather unusual that of the 189 swimming pools in Chicago, licenses are required for only 4. None of the unlicensed pools in the city are subject to or are provided with sanitary inspection service by any municipal department. The only inspection is that made by the agency operating the pool.

The inspections and investigations made by the Bureau of Housing Inspection are confined entirely to private property. For example, a complaint arising because garbage is strewn on a privately owned vacant lot would be handled by the Bureau of Housing Inspection, whereas the same condition in a public alley or street would be the responsibility of the Department of Streets and Electricity.

An attempt is made to have the inspectors, when visiting a building, observe all defects, whether or not these defects are within the jurisdiction of the bureau to which he is responsible, so that the condition may be reported to the appropriate municipal department. For example, if defective plumbing were detected, it would be reported to the Bureau of Plumbing Inspection. The Bureau of Housing Inspection has been given recently the responsibility of inaugurating and carrying on a rat-control program.

COMMENTS ON INSPECTION SERVICES A study of sanitation inspection services indicates that the citizens of Chicago are not receiv-

ing the number of inspections needed for adequate control of environmental sanitation.⁴ This situation is the result of a number of conditions which will be discussed, but not necessarily in their order of importance.

One of the fundamental weaknesses in the whole system of sanitary inspection, which limits the scope of this vital service, is that with the exception of complaints practically all inspectional activities are connected with license applications. The Municipal Code of Chicago provides for the periodic inspection of licensed places, but records indicate that such inspections are not made often. The important point, however, is that places which do not require licenses under existing legislation are not inspected except on complaint, regardless of the public health importance of their operation and maintenance.

While defects in the municipal code, lack of sufficient appropriations, and other factors may be held partly responsible for lack of inspection of these places, it would appear that basic health problems in this vital sanitary inspection service should be the concern of the health department. Many health departments throughout the nation carry on activities, frequently upon requests by the public, for which they have no legal responsibility, but which are undisputably in the interests of the public health. Eventually, if these services are desirable and continue to be necessary, legal authority may be granted. For the past few years the Chicago Health Department has requested from the Chicago City Council additional appropriations to do more adequately the work already within its jurisdiction and to broaden the scope of its environmental sanitation activities, but these requests have not been granted.

This situation is responsible to some extent for the inadequacy of staff of the Bureau of Housing Inspection in the Department of Buildings, now the principal unit of the municipal government in charge of general inspection work. At the present time the bureau has 25 inspectors for general inspection work, 12 of whom are plumbers supplied to the bureau and paid by the Division of Water Pipe

⁴In clarification of these comments and recommendations it should be pointed out that plans for reorganizing the health department along universally accepted lines, so that it can carry on a well-rounded and progressive program, are presented in Chapter 42. If these plans are accepted and executed, the Chicago Health Department will be again in a position to fulfill with credit the full responsibilities of a public health agency in the field of sanitation.

Extension of the Department of Public Works. During the first six months of 1946 these 25 inspectors made an average of about 6 inspections per day. While this is not a large number of inspections, it does represent fair performance if the work is well done. Although time was not available on the present survey to appraise carefully many details of the quality of the bureau's inspection work, there are indications that it could be and should be improved. To arrive at a proper evaluation of the bureau's work, information is needed regarding the qualifications of its personnel. This information was not obtainable, however, because the Department of Buildings did not distribute to its personnel the forms used by the Chicago-Cook County Health Survey for collecting personnel data.

As nearly as can be determined from the fragmentary records of both the building and health departments, few permanent benefits to the public health have accrued in recent years from the activities of the Bureau of Housing Inspection or from the former Section on Community Sanitation, in which essentially the same personnel were employed. This situation is not altogether the fault of the bureau, since its staff are occupied so completely by inspections in response to complaints, license applications, hearings, and court cases that little time remains in which to plan and carry on a well-rounded program.

Although some of the topics listed in Table 60 are closely associated with public health, others are vital. For example, while the cleanliness of a brickyard is a most desirable objective, it is not as closely associated with the public health as the sanitation of a swimming pool. For neither of those facilities does the Board of Health have responsibility. In the case of barber shops, it will be noted that the health and building departments both have responsibility. In this case, a clearly defined division of responsibilities should be effected between the two departments.

While a considerable amount of the work transferred to the Department of Buildings by the ordinance of January 30, 1946, seems to be proper, some of it is definitely of a public health nature and, in the public interest, should be returned to the Board of Health at an early date. The changes required in the Municipal Code of Chicago to effect this transfer should not be made simply by amending or shifting sections and chapters in a hit-or-miss fashion, as appears to have been done by the corporation counsel in preparing the ordinance

transmitted to the Chicago City Council on January 15, 1946. Physicians, engineers, and attorneys should review carefully all ordinances relating to sanitation and health. Consideration should be given also to the need for new legislation.

The following quotations from Sections 157-8 and 108-5 of the Municipal Code of Chicago illustrate the need for consultation with public health authorities in the preparation of ordinances. With regard to life saving at swimming pools, Section 157-8 states that "the qualifications of such life saver and the fitness and sufficiency of such life saving apparatus shall be determined by the Commissioner of Buildings." With regard to life saving at bathing beaches, Section 108-5 states that "no person shall be eligible to employment in the capacity of life saver, as herein before provided, unless and until he shall have furnished satisfactory evidence to the Board of Health or its duly authorized representative of his knowledge of approved methods of resuscitation of those apparently drowned and of the operation of the apparatus required to be installed at such bathing beaches."

The following chapters of the Municipal Code of Chicago and the subjects covered by these chapters should be included in the amendments needed to restore to the health department its basic responsibilities: Chapter 157 (Swimming Pools) Chapter 167 (Scavengers) Chapter 179 (Trailer Camps), and Chapter 99 (Nuisances).

Re-establishment of these responsibilities and resumption of other activities in the Chicago Health Department which may be recommended by the Chicago-Cook County Health Survey will, of course, require appropriations if they are to be carried out. Such action will relieve the Bureau of Housing Inspection of some of its responsibilities and will enable the bureau to perform its many remaining duties more effectively.

BUREAU OF HEATING, VENTILATION, AND INDUSTRIAL SANITATION INSPECTION

The Section of Heating, Ventilation, and Industrial Sanitation of the Chicago health department was transferred to the Department of Buildings by an ordinance passed by the Chicago City Council on January 8, 1945.

The present activities of the bureau are similar to those it carried as a section of the health department. It was then concerned with inspection, testing, code enforcement, and issuance of certificates of

approval for heating and ventilating systems, sterilization of clothes by laundries, control of unhealthful industrial products, and investigation of public nuisances.⁵

RECOMMENDATIONS

It is recommended that:

1. As a general principle, inspection service shall be performed by that agency of local government having priority rights and responsibilities in a given field, provided those rights and responsibilities are inherent in the nature of the agency rather than arbitrarily established by decree of the city council or other local governing body, and provided further that in the application of this principle duplication is not created.

2. In the interest of avoiding duplication, plumbing inspection as it relates on the one hand to new and reconstructed buildings and, on the other, to occupied buildings, both of which involve important problems and items of public health significance, shall be administered by appropriate branches of that city department which possesses the responsibility and the means of remedying defects.

3. Plumbing inspection shall be under the direction of a competent professional health engineer thoroughly equipped with a knowledge of the hydraulics of plumbing and the relationship between plumbing and public health.

4. The plumbing inspection service shall be staffed adequately with inspectors and plan examiners selected solely on the basis of technical merit.

5. Inservice training shall be given all new and currently employed plumbing inspectors and new appointments shall be probational, pending the satisfactory completion of an inservice course of training.

6. Existing ordinances shall be amended so as to restore to the Chicago Health Department its former responsibilities with respect to swimming pools, trailer camps, scavengers, and nuisances.

7. Wherever joint responsibility between the health department and another agency exist there shall be a definite agreement drawn up in written form by the executive officer of the health department and the head of the other agency defining the precise limits of their respective jurisdictions in accordance with ordinance provision.

8. The staff of the Bureau of Housing Inspection shall be in-

⁵ See Chapters 32 and 33.

creased to a level commensurate with the size and character of its proper functions.

9. The Bureau of Housing Inspection shall improve its service by (a) reducing the number of nonproductive inspections and (b) by increasing the number of essential inspections made in connection with house renewals and those which should be made on a routine investigational basis as contrasted with "trouble shooting."

10. Wherever any responsibility is placed upon the health department or any other agency performing duties related to health there shall be corresponding provisions made for financing the employment of personnel adequate in quantity and quality to discharge such responsibilities in a satisfactory manner.

RAT INFESTATION AND RODENT CONTROL

by John J. Essex

RODENTS INCLUDE RATS, MICE, SQUIRRELS, and other small animals that are not generally found in cities, but may exist in rural areas. In the Cook County area the rat, outstanding because of its prevalence and widespread distribution, is of particular importance from a public health standpoint.

Three species of rats are common in the United States: the black rat (*Rattus rattus rattus*), the roof rat (*Rattus rattus alexandrinus*), and the brown rat, known under such names as gray rat, barn rat, sewer rat, Norway rat (*Rattus norvegicus*). Where the *R. norvegicus* is prevalent, the other two species are few in number, but they will increase as the number of *R. norvegicus* diminishes. Not any of the three species are climbing rats. They remain near or below the ground level, where their nesting places are found. Discussion in this chapter will be confined to the *R. norvegicus*, since at present this species is the type prevalent in the Cook County area.

The *R. norvegicus* is normally more prolific than other species, and where satisfactory harborage and an abundance of food exists both the number of times per year the female produces and the number in the litter increase. In general, this rat produces from three to five times a year with litters ranging from seven to fourteen. Conditions existing in Chicago and many parts of Cook County indicate the maximum production. Normally, this species of rat is not seen in daylight, but this characteristic does not appear to apply in the Chicago area. It is vicious in its habits, constantly fighting other rats, and it will attack man when cornered. It often bites sleeping infants and adults. It is omnivorous and, although grains are its favorite foods, it adjusts itself to whatever food is available.

Estimates indicate that the rat ration (the amount of food each rat consumes) costs the community about two dollars per year. The cost of food destroyed by rat pollution costs ten times that sum per

rat, to say nothing of the cost of other destruction for which the rat is accountable.

The rat has long been a public health problem, because it may be the vector in the spread of certain diseases. Bubonic plague and endemic typhus, rat diseases which may be transmitted to human beings through the rat flea, are of importance in certain areas, but are not at present a problem in this area. Other diseases with which the rat may be involved are infectious jaundice, trichinosis, and infections associated with food poisoning.

The relation between infections caused by food poisoning and the presence of rats is of particular significance in Chicago because of the heavy infestations of rats in and about Chicago's food establishments.

The rat has been convicted of being a health hazard, a great destroyer of property, a vicious animal, and a general pest. Why do we tolerate the rat when methods for its control are known and can be applied? The answer lies with the citizenry of this community.

HISTORY AND DEVELOPMENT OF ORGANIZED RODENT CONTROL IN CHICAGO

So far as records show, no organized rodent control program was operated in Chicago before 1933. There were, however, numerous and repeated efforts by individual home owners, who because of either civic or personal pride, fear, or disgust attempted to eradicate rats from their own premises. The owners of many business establishments also were aware that the rat is not only a dangerous, loathsome trespasser but also responsible for the destruction of vast quantities of merchandise. In a number of instances the rat, by undermining foundations and damaging other structural elements, has caused extensive and costly damage to an entire building. In some cases the damage was so great that demolition of the structure was necessary. A business concern confronted with the possibility of suffering such a tremendous economic loss soon realized that its very existence depended on corrective measures. It is, therefore, not surprising that many business establishments undertook individual rat extermination programs before the city-wide program was started.

The average person had little knowledge, before 1933, of the potential danger of rats in the spread of disease. There were no cases of endemic typhus and bubonic plague in the Chicago area. Although epidemics of bubonic plague occurred on the west coast, the Rocky

Mountains seemed to most, even of those aware of the rat's part in the spread of this disease, a sufficient barrier to the migration of rats, Chicago being at a distance of 1,500 miles east of them. Some public health officials and well-informed citizens did, of course, recognize the potential danger, since trains, buses, airplanes, and other conveyances provided a means for transportation of west-coast rats into the Chicago area.

THE INITIAL PROGRAM This possible threat to Chicago's health and the numerous requests by businesses and civic organizations for assistance from the city in their efforts to exterminate rats, were undoubtedly the chief factors responsible for the organization of what is believed to be Chicago's first rat-control program.

The program was initiated in November, 1933, with the assistance of the Civil Works Administration (C.W.A.), which furnished ten men for rodent control. Chicago packing companies furnished meat for bait; the Industrial Fumigant Company supplied Red Squill to be used as poison. The city administration assigned one man to plan and supervise activities. Because of the co-operative nature of the undertaking, with labor, bait, poison, and supervision all furnished by different agencies, successful operations were slow in getting under way. The program all but stopped when the C.W.A. withdrew its assistance.

I.E.R.C. AND W.P.A. ACTIVITIES The rodent-control program was renewed by the Illinois Emergency Relief Commission (I.E.R.C.) as one of its projects for the employment of men formerly employed by the C.W.A. and others who called upon the I.E.R.C. for assistance in obtaining work. A short time later a more substantial program was instituted, funds made available by the Works Progress Administration (W.P.A.) being used for the employment of 250 to 1,000 men for rodent control. The city supervisor, who was experienced in this type of work, carried on a thorough and effective piece of work, including considerable clean-up work in the areas within which the project operated, in addition to the placing of poisoned bait. Citizens were so pleased that the project had been undertaken and so eager to assist in the destruction of rats that permission to enter private premises was obtained easily, and, with few exceptions, workers were urged to place the poisoned bait throughout the entire premises, including the interior of individual homes and other private buildings. Since proper distribution of bait is a very important factor in a rat-poisoning campaign, such co-operative

efforts on the part of private citizens produced very good results, which were widely publicized.

TERMINATION OF W.P.A. PROJECT Business firms and individuals engaged in rat control objected strenuously to having work done in private homes and buildings and formed the Committee of Pest Control Activities to protest such activity. At a hearing conducted by the Board of Health, the responsible agency, the operators took the stand that the W.P.A. project should be limited to work on public property, public alleys, streets, and other public places in the city. Operations on private property, it was alleged, constituted unfair competition and an infringement in the field of private industry. The Chicago Chamber of Commerce and other groups backed up the private operators by writing letters of protest to the Chicago City Council. As a result of this agitation Federal assistance for the entire rodent-control program was withdrawn, in spite of attempts by the city administration to retain it. Since funds were available from no other source at that time, all rodent-control activities in Chicago were terminated in 1938.

RENEWAL OF PROGRAM IN 1940 Constant appeals to the city council for revival of the program by many civic organizations and individuals within the next two years, a death from rat bite fever which stimulated the coroner's jury to recommend that the council provide funds for rat prevention, a request for rat-control activities in the thirty-sixth ward, and the inclusion in various city documents of statements pointing out the need for the program finally resulted in passage by the council of an ordinance authorizing \$5,000 to be expended by the commissioner of public works for the control of rodents. This ordinance automatically relieved the health department of responsibility for this type of work.

Under this ordinance and with this meager appropriation, a rodent-control program was undertaken again in 1940. Because of renewed protests by the private operators, activities were limited to alleys and other public places, although an agreement was reached that operations could extend four feet inside the lot line to permit the proper dusting of rat burrows extending under the pavement in the public alleys. Not all pest operators were opposed to the program, however. One operator furnished men at his own expense to distribute poison in the interior of buildings adjacent to the alleys in which the public project was operating. Eradication was most effective in these areas. In spite of the small appropriation and the limi-

tations imposed upon the program, it is reported that the number of rats in the areas covered was reduced and that some benefit was derived from the work.

The \$5,000 appropriation was doubled in 1941, principally because of the results obtained in 1940. It was increased to \$25,000 in the years 1942 and 1943, to \$50,000 in 1944, and to \$100,000 in 1945 and 1946. Activities were broadened in 1942 as a result of the increase of the appropriation so as to include the use of calcium cyanide blown into rat burrows by foot pumps. This progressive move increased the effectiveness of the results obtained.

PRESENT RODENT-CONTROL ACTIVITIES

The Division of Refuse Collection and Street Cleaning of the Department of Streets and Electricity conducts rodent-control activities at the present time. The method of handling personnel is somewhat ambiguous. There is one supervisor of rat extermination who is responsible to the superintendent of the Division of Refuse and Street Cleaning. One man is assigned as a rat exterminator in each of the 50 city wards. These men work under the jurisdiction of the ward superintendent, although apparently the supervisor of rat extermination has the authority to direct their activities when they are engaged in actual rodent-control work. The lines of authority are not entirely clear, however, and this is not conducive to efficient administration.

Although a rat exterminator is assigned to each ward and when the necessity arises additional men may be employed, at times the services of some of the fifty men assigned to the wards and also of the extra men may be discontinued. It was reported at the time of the survey that fifty-seven men, not including the supervisor, were employed in rat-control work.

The rat exterminators receive approximately \$2,100 annually, paid at the rate of \$8.05 daily for a five-day week. If a day is lost for any reason, the time may be made up on Saturday. No transportation is furnished.

Since the quantity of material and equipment on hand for rat-control work at the beginning of 1946 was sufficient for the year, the entire \$100,000 appropriation was available for salaries.

METHOD OF OPERATION The activities of personnel engaged in the present program are confined largely to the dusting of rat burrows with calcium cyanide. Inasmuch as some hazard is involved in

the use of this highly lethal substance, it is considered dangerous to permit one man to work alone. Consequently, areas are selected in order of importance and worked by a crew of two or three rat exterminators, each of whom is selected from a different ward. In operating as a three-man crew, one workman is equipped with a foot pump containing approximately 5 pounds of calcium cyanide dust, and the second workman has a shovel. The third workman carries a piece of chalk with which to designate areas to be worked and also a stick or some instrument with which to kill rats which may attempt to escape from burrows under treatment. This workman precedes the other two men through an alley and locates burrows to be fumigated. The operator of the pump inserts the discharge hose into a rat burrow through which the calcium cyanide dust is to be forced. Other openings are closed by the workman with the shovel. All members of the crew are on the alert to prevent rats from emerging and seeking refuge in near-by areas, which are often on private property and "out of bounds" under present operating arrangements. This procedure is very important because of the tremendous amount of rat harborage which is provided by rubbish, trash, stones, lumber, and garbage strewn on private property throughout large sections of the city.

Despite the efforts of the rat exterminating crews and the efficient method of operation, it is relatively easy for large numbers of rats to escape from fumigated burrows, and as a result the percentage killed is not great. This procedure continues day after day, and while it may appear to the casual observer that many rats are being destroyed, in reality a very small portion of the rat population is being molested. No doubt there is no more effective method of destroying rats than an efficient dusting program. When workers' efforts are confined to certain restricted areas, however, and trash, rubbish, old lumber, and piles of brick or stone are not removed from private, as well as public, property before fumigation, the work performed is hardly worth the effort.

Private exterminators are reluctant to distribute poison bait of any kind in yards or passageways of private premises, because of a nuisance clause in Chapter 99-11 of the municipal code. This clause forbids the spreading of any poison in any yard or passageway on private premises without placing it in a receptacle of such character that it can be reached only by the kind of vermin which the poison is intended to kill.

This shows clearly that there remains a sort of "no man's land" between a line four feet inside the rear property line and the rear of the building line which is treated by neither the city forces nor the pest-control operators. This "no man's land" naturally provides a space at the rear of the house which in many cases creates ideal conditions for harboring rats. Numerous instances of such conditions have been observed throughout the city.

The rat is a cautious creature, and when it realizes that other rats have been killed or threatened, it is quick to seek a safer locality. In many instances this safety may be found within a very short distance. The rat may burrow into the ground or under a sidewalk or building only a few feet from the alley line and continue its existence unmolested.

Poison in the form of Red Squill is used at times to supplement the calcium cyanide dusting program. It should be emphasized, however, that even though the technique of disseminating poison bait is skillfully carried out, the results are of limited value because of the extensive food supply in the form of garbage in streets and alleys throughout the city. A cunning animal of this nature will hesitate to partake of poison bait when its normal food supply is abundant. Most of the garbage observed in the streets and alleys is there as a result of improper disposal facilities and poor methods of removal. Householders, food-shop operators, and others responsible for garbage disposal can take potent steps toward eliminating rats by providing and using suitable receptacles for the storage of garbage.

Perhaps the most important measures in a rat-control program are (1) rat starvation by depriving it of its food supply, i.e., by using methods of garbage storage and disposal which will eliminate the spilling of garbage from unsuitable containers and the piling up of garbage in area-ways, alleys, streets, and vacant lots, and (2) rat prevention, i.e., denying access to places where nests can be made by rat proofing and rat stoppage, both measures of a semi-permanent nature.¹

The discussion in Chapter 10 indicates how far from solution this problem is in Chicago. Rat proofing and rat-stoppage measures

¹ A rat-proof structure is one built in such manner and of such material that it is impossible for the rats to have ingress or egress. "Rat stoppage" is a term applied to the treatment of exterior walls, roofs, foundations, or openings therein, or any part of a unit containing one or more connected structures. The cost of rat proofing old structures individually is so great as to be generally impractical. Rat stoppage of one or more buildings as a unit, however, may be accomplished at very little expense.

were not a part of the rodent-control program in Chicago and Cook County at the time of the survey. Nevertheless, these measures are vastly more effective than anything which has been done in Chicago heretofore.

Suitable regulations must be passed before the measures just discussed can be incorporated in the present rodent-control program. Even if suitable regulations are adopted, the effectiveness of their enforcement will depend upon the desire and will of the people for a clean city.

OLD BUILDINGS AND SHEDS AS HARBORAGES One of the most difficult tasks with which the rat exterminator is confronted is the eradication of rats living in buildings having hollow walls and wood floors laid directly on or near the earth. In Chicago there are thousands of such buildings, old dilapidated garages, sheds, and barns, which not only furnish excellent harborage for rats but also constitute serious fire hazards.

INADEQUACY OF PRESENT ORDINANCES As nearly as can be determined, there are only two ordinances in the Chicago Municipal Code which refer to rats. One, Chapter 99-11, was mentioned earlier in this discussion. The other is Chapter 124, which refers to fumigation of buildings for vermin, including rats. Neither chapter contains any provision specifically relating to the enforcement of rodent control. It is understood that many notices to correct conditions, including heavy rat infestations, are issued under Chapter 99-11, but it can be seen readily that when rat-control ordinances are so inadequate, a conviction in court would be difficult to obtain. The loss of even one case in court could nullify the effectiveness of the ordinance and place the enforcing agency in an embarrassing position.

INSPECTORS CONCERNED WITH RAT CONTROL There are inspectors in different branches of the city government who may issue notices concerning nuisance violations. Those most closely associated with the enforcement of the nuisance clause as it applies to rats are in the health and building departments. Those in the health department, known as food inspectors, inspect establishments where food is stored, processed, or served; those in the building department, known as housing inspectors, inspect a number of different items. In either case, there are too few inspectors and in general the training needed to conduct rat infestation investigations is lacking. Orders to inspectors concerning rat control are ambiguous, evidently because of lack of emphasis on the problem.

PUBLIC HEALTH SIGNIFICANCE OF THE RAT IN CHICAGO

A check of the records indicated that no disease that could be classified as a direct rat-borne disease had been reported. As an indirect medium of transmission of diseases, however, the rat plays a generally unrecognized role. Although it is known to cause gross contamination of food supplies and thus to be responsible for individual cases and epidemics of food poisoning, the source of trouble is rarely identified with the rat. The rat is implicated even more directly in the transmission of disease to the human family by its infection of hogs with trichinae. The disease known as trichinosis is caused in human beings by the ingestion of infected pork which has been cooked inadequately.

The possibility that rats infected with either bubonic plague or endemic typhus, particularly the latter, might enter Chicago should not be overlooked. There are, at the present time, two regularly scheduled airplane arrivals in Chicago each week from foreign countries, one from Cairo, Egypt, where bubonic plague has been reported recently, and another from England. It is also understood that after July 1, 1946, four planes will arrive daily from Toronto, Canada. It is reported also that the number of planes arriving in Chicago from foreign countries will be increased by 400 or 500 percent within the next six months. Although these planes are inspected at the airport by U. S. Quarantine officers the possibility that infected rats may enter Chicago and infect the tremendous local rat population is a constant threat to the health of the community.

Many railroad trains, buses, trucks, and private cars also enter this great transportation center from all parts of the United States. Rats infected with the virus of typhus fever or other dangerous rat-borne organisms could be transported to Chicago by any of these means. Foreign ships visit Chicago's port occasionally, and while most individuals feel that there is little danger from this source, it should be remembered that the rat is a traveler and very often uses this means of transportation to reach its destination. Consequently, although no rat-borne disease was known to be present at the time of the Survey it must be realized that each rat in Chicago is not only a potential carrier of rat-borne diseases but may be involved also in the mechanical transmission of other diseases.

TYPE OF RAT FOUND It was pointed out at the beginning of this chapter that the present rat population of Chicago consists prin-

cially of the *Rattus norvegicus*, or brown rat. This type of rat usually lives in burrows under the ground, in sewers, around docks, or in cellars of homes. This rat is a powerful animal for its size, and when in danger will not hesitate to attack animals much larger than itself, including man.

There are, in fact, records of many incidents in which the Norway rat has been known to attack human beings. It is rather unusual to see rats traveling about during the day, but this type of rat is so numerous in Chicago that it may be observed at almost any hour of the day or night when it is traveling from one place to another. It is common to see on the streets many dead rats that have been killed by the movement of traffic. In the alleys of most parts of the city hundreds of dead rats may be observed at almost any time. This same condition, with possibly somewhat heavier infestation, existed at all refuse dumps visited during the survey.

ECTOPARASITES The rat flea is the principal medium for transmission of disease from rat to man. During 1940, when the Chicago City Council appropriated money to be expended for rodent control, it was decided that an effort should be made to determine what type of ectoparasites were being harbored by the rat population. Consequently, a large number of rats were examined. The results of the examination indicated that about one third of the rats examined harbored the rat flea *Xenopsylla cheopis*, the principal disseminator of bubonic plague.² The rats examined also harbored other types of fleas, as well as mites and lice.

COMMENTS

Even though \$100,000 was appropriated by the city for rat control in 1946, many people realize that the program is neither adequate nor broad enough in scope and that the rat problem is becoming greater each day. Therefore meetings are being held by various groups, and the newspapers are publishing articles illustrated by photographs which describe and depict conditions as they exist, especially in the alleys of the city. The disposal of garbage and refuse has been one of the principal subjects of discussion by these groups. As far as can be learned, however, no organized plan has been presented under which these activities may be correlated with rodent-control activities.

² Otto F. Gursch, "Flea Survey of Chicago's Wild Rats" (unpublished report prepared in 1940 for the Commissioner of Public Works, Chicago).

The primary need is for a comprehensive program which will attack the fundamental problem of rat control—prevention of rat propagation. Trapping and poisoning of rats, however useful these procedures may be, do little more than “snipe” at the problem. The two cardinal principles in rat eradication are “starve out” and “build out,” i.e., deprive the rat of food and water and destroy his harborage. A program based on these two fundamental principles must include plans for a thorough overhauling of the garbage- and waste-disposal systems, a practical and efficient program of sanitation and rat stoppage on private premises, and revision of existing regulations in regard to rat destruction on private property. Until these measures have been taken, it is hardly worth while to bother to kill a few rats, as this procedure only stimulates them to multiply faster. It is literally true, therefore, that unless the authorities are willing to institute a thorough-going program to make war on rats, the taxpayers’ money is being poured down a rat hole.

RECOMMENDATIONS FOR CHICAGO

It is recommended that the city:

1. Shall require immediately, insofar as the authority now possessed by the city will permit, the proper storage and removal of all waste material and the proper storage of other material that will furnish protection, harborage, or food and water for rats on both public and private property.

2. Shall promote an extensive educational program, utilizing newspapers, radio, the assistance of public service companies, schools, churches, neighborhood centers, and every practical medium to inform the public and obtain its support in eradicating the rat.

3. Shall enact an adequate rat-control ordinance patterned along the lines of those now in effect in Dallas, Tex., and New Orleans, La., and containing the following salient features:

- a) Provision for the permanent appointment of a responsible person under the direction of competent authority, preferably the health department, who will have supervision of all rodent-control activities in both governmental departments and private agencies.

- b) Requirement that owners or tenants maintain premises free from rats.

- c) Provision for the compulsory rat proofing³ of all new structures or of any portion of a structure being repaired.

³ A rat-proof structure is one built in such manner and of such material that it is impossible for rats to have ingress or egress.

d) Provision for compulsory rat stoppage,⁴ where necessary, of existing buildings.

e) Requirement that garbage, rubbish, trash, manure, ashes, and any other material attractive to rats be properly stored, handled, and disposed of in a satisfactory manner.

f) Requirement that all lumber, stone, junk, or other material suitable for rat harborage be racked 18 inches above the ground.

g) Requirement that wooden floors be either raised 18 inches above the ground or replaced by concrete floors and curtain walls.

h) Provision for the appointment of a trustee and the establishment of a revolving fund⁵ to be used for the purchase of materials, the payment of salaries, and other current expenses which may be charged to the property owner for work when completed.

i) Provision for the establishment of a school to train city employees and others in the principles of rat stoppage and rodent control.

4. Shall appropriate annually sufficient funds to carry out the provisions of the ordinance, maintain an effective organization, and conduct an adequate rodent-control program.⁶

COOK COUNTY (EXCLUSIVE OF CHICAGO)

A survey of the rodent-control activities in the Cook County area excluding Chicago would involve an investigation into each of the incorporated municipalities, as well as the eighty-nine densely populated unincorporated areas. Such an extensive survey was not deemed advisable. It was believed that a survey of representative samples

⁴ "Rat stoppage" is a term applied to the treatment of exterior walls, roofs, foundations or openings therein, or any part of a unit containing one or more connected structures.

⁵ The cost of rat proofing old structures individually is so great as to be generally impractical. Rat stoppage of one or more buildings as a unit, however, may be accomplished at very little expense.

⁶ The method of operation, using the revolving fund, is to select an area in which there is need for rat control work. The area is then surveyed to determine the degree of rat infestation, the amount of work necessary, and the cost of the operation. Owners or occupants of the premises are then contacted, informed of the situation, and requested to sign an agreement authorizing the city to do the work and agreeing to pay the cost or agreeing to do the work personally or by contract subject to city inspection and approval. The cost agreement should include, in addition to rat stoppage and rat eradication, the removal of harborages, the correction of garbage problems, and the supplying of traps, if necessary. If the city is requested to do the work, personnel and equipment maintained by the revolving fund are assigned to the operation. When the work is completed, the cost of the project is collected from the property owners or occupants, and the revolving fund is replenished. The revolving fund should be based on \$5,000 for each section containing a population of 50,000. This fund is to be set up as a trust fund, replenished for work performed, and must not be returned to the general fund at the end of the fiscal year if it is to be a continuing program.

of the municipalities, of special areas, and of areas included in the more important health department jurisdictions would furnish adequate information as to rodent-control activities in Cook County. Accordingly, surveys were made of the rodent-control activities of the Cook County Department of Public Health and of the following cities, towns, and villages: Chicago Heights, Robbins, Cicero, Berwyn, Oak Park, Evanston, Winnetka, Kenilworth, and Glencoe. Special investigations were made of a hog farm and of numerous large dumps in the Cook County area. The principal findings of these surveys are described below.

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH Organized initially in 1940 as the Cook County Public Health Unit, a subdivision of the Cook County Department of Public Welfare, this agency had no regulatory power and could act only in an advisory capacity or as an agent of the Illinois Department of Public Health on certain specific problems when so designated. On December 1, 1945, the Board of Commissioners of Cook County, by resolution under the 1943 Illinois statutes, as amended by 1945 statutes, reorganized the Cook County Public Health Unit as the present Cook County Department of Public Health. This department now has authority to make public health rules and regulations and to enforce them in all areas of Cook County not under the jurisdiction of a full-time health officer as defined by the Illinois Department of Public Health. It is obvious, therefore, that there has not yet been sufficient time for this agency to take any action for the control of rodents on a county-wide basis.

Since rodents, like all other carriers of disease, have no respect for political boundaries, it is imperative that programs designed to control rodents also should override political boundaries. Control programs, if left to each of the ninety municipalities (including Chicago), will eventually result in good, bad, or indifferent programs depending upon the financial resources, availability of trained personnel, and adequacy of supervision in each area. It is apparent that a unified program covering the entire county area is the first requisite to the control of rodents.

The Cook County Department of Public Health has the legal status to provide such a program for the county. Further, this department has the nucleus of an excellent engineering division in the well-qualified, competent sanitary engineering personnel it now employs.

CHICAGO HEIGHTS The population of this city was 22,461 in

1940, and the present population is estimated at 30,000. The city is served by a part-time health department, which is aware of the rodent problem. Personnel of the department consists of a part-time medical officer, who is subject to call, a part-time chemist, who is also employed by two other agencies, and a part-time sanitary inspector, whose working day is from 3:00 P.M. to 10:00 P.M.

Complaints about rat infestations are received by the superintendent of streets, a full-time employee. This individual, however, exercises no control over rodent-control activities, but simply transmits the complaint to the health department chemist.

Upon receipt of a complaint, the chemist prepares individual "torpedoes or kisses" from "Red Squill Poison Bait." When the sanitarian reports for duty at 3:00 P.M., the two men answer complaints and distribute approximately twenty "torpedoes" around each premise from which complaints have been received, but no treatment is given the surrounding area. It was stated that occasionally poison bait is distributed on the city dump, which is in close proximity to the city.

No effort is made to eliminate rat harborages, which exist in the form of old bricks, trash, lumber, and junk, or to eliminate the source of the rodents' supply of food and water. The city council has appropriated three hundred dollars (\$300) for rodent control, indicating that they recognize the existence of a rat problem in the community, but they have passed no ordinances on rodent control.

A heavy infestation of Norway rats exists in Chicago Heights. Methods now employed are inefficient and inadequate. No appreciable relief may be expected until a well-organized, co-ordinated program is established.

ROBBINS The village of Robbins had a population of 1,349 in 1940, and it is estimated that the present population is 4,000. The village is nearly exclusively populated by Negroes. Most of the buildings are of frame construction and are in a very poor state of repair. The topography is extremely flat and low, with poor drainage throughout, as indicated by the large water-covered areas. A very heavy infestation of Norway rats is present in the village. No organized effort at rat eradication is being made.

CICERO The town of Cicero had a population of 64,712 in 1940 and has an estimated population of 70,000 at present. The health department is in charge of a part-time medical officer, who has, among other personnel, two sanitary inspectors. The depart-

ment of public works conducts what little rodent control is attempted. The commissioner of the department keeps a bag of poison in the corner of this office. When complaints are received, an employee of the public works department, provided with poison bait, visits the complainant, makes an inspection, and places the poison in appropriate places on the premises. No co-ordinated plan or regular program is in operation to remove harborages or otherwise eradicate rats, nor is there any ordinance concerned with the elimination of rats.

Sanitary conditions in Cicero from a rodent-control viewpoint are so similar to those found in Chicago that remarks made in the report concerning that city may be applied to Cicero without change.

BERWYN The city of Berwyn had a population of 48,451 in 1940 and has an estimated population of 52,000 at present. The township of Berwyn, which is coextensive with the city of Berwyn, is organized as a health district in accordance with state statutes. However, the health officer is a part-time employee. The health department employs three full-time sanitary inspectors.

In conjunction with the W.P.A., some rodent-control activities were initiated in 1938. This program did not last long, however, and at present no control program is conducted. No ordinances on rodent control exist, and no funds have been appropriated for such service.

Largely because of efficient garbage collection, lack of rat harborages, and a sense of community pride on the part of the individuals, there is comparatively little evidence of rat infestation.

OAK PARK The village of Oak Park had a population of 66,015 in 1940 and has an estimated population of 70,000 at present. The village is served by a health department directed by a part-time health officer. Four full-time sanitary inspectors are employed by the department.

Oak Park is a comparatively clean village, and very little evidence of rat infestation was found. This satisfactory situation is the result of a regular system of refuse collection, incineration of garbage, effective education of the public, and an effective rat-poisoning program, which has just been completed.

Rodent-control activities in Oak Park are carried on by the health department. Inspections of all food establishments, alleys, streets, and other places to guard against rodent infestations are made by the sanitary inspectors, and where infractions are found the person or establishment responsible is informed of the condition

and given a warning. If the condition has not been corrected when the inspector returns, a summons is issued for the person or representative of an establishment who was warned to appear in court for maintaining a nuisance. Few cases are taken to court. The employees of the health department also provide educational lectures and distribute literature, not only to the merchants of the village, but to householders as well. There are no ordinances covering any phase of rodent control.

EVANSTON The city of Evanston had a population of 65,389 in 1940 and has an estimated population of 70,000 at present. The city is served by a health department having a full-time health officer as director. Three sanitary inspectors are employed on a full-time basis under civil service. This health department is thoroughly cognizant of the fact that the rat is a potential carrier of disease, and the health officer has been active in bringing this matter to the attention of the citizens of Evanston. He submits educational newspaper releases on rodent control to Chicago newspapers and to the local Evanston weekly paper. Co-ordination is maintained of rodent-control activities with cleanup programs, Boy Scout activities, school programs, and the work of civic organizations. Educational literature in the form of pamphlets, drawings of proper garbage-can racks, and other general sanitation material is distributed by the health department.

Upon complaints of rodent infestation, the sanitary inspector visits the complainant and makes a survey of the neighborhood for a distance of approximately one city block. If the complaint is justified, the health officer may write letters to the citizens in this area informing them of the situation and requesting the co-operation of each. The citizens are then furnished rat poison and told to distribute it at a given time. In this manner the entire area is treated simultaneously, and good results are often obtained.

The garbage in this city is collected twice weekly and is disposed of by incineration. The residue from the incinerator, together with other rubbish, is disposed of at a well-kept dump located approximately three miles from the city.

Although considerable civic pride on the part of the individual is obviously present in Evanston, there still exists a moderate infestation of Norway rats. This condition results from the lack of adequate ordinances for enforcing control measures, the presence of rat harborages in many parts of the city, the presence of adequate

food, although in relatively small amounts, and lack of routine eradication and rat-stoppage programs.

WINNETKA, KENILWORTH, AND GLENCOE The villages of Kenilworth and Glencoe utilize the services of the Winnetka Health Department and its full-time health officer in the provision of their health services. The combined population of these three villages in 1940 was 22,190. One sanitary engineer and one sanitary inspector are employed on a full-time basis to supervise general sanitation activities.

The health department is cognizant of the rodent problem, but most of the activity at this time is of an educational nature. Rodent complaints at present are very few, and they are handled by one of the sanitary inspectors. Some poison bait is used, as well as calcium cyanide for dusting rat burrows. An efficient system of refuse collection is maintained, and that fact, in addition to the generally high economic status of the area and the consequent lack of rat harborages, results in a light rat infestation in these villages.

SPECIAL AREAS Hog Farms.—The survey included one of the better equipped and operated hog farms in Cook County. This hog farm maintains several thousand hogs and transports garbage from Chicago by private scavenger for feed. The hogs are fed from concrete feeding troughs in numerous feeding pens equipped with concrete floors. These pens are reputed to be washed daily, but observation of the pens at the time of the survey did not confirm this fact. There is no lack of food for hogs or rodents in the feed troughs at all times.

The area from 6 to about 100 feet from the pens is honeycombed with active rat burrows. The burrows are located, in part, in sections covered with heavy grass and weed growths and are not easily discernible. There is a very heavy infestation of Norway rats on this farm. As far as could be determined, no effort is being made at control or eradication. Areas such as these are menaces, not only to the individual farm but also to the entire surrounding community.

Dumps.—In the course of the general sanitary survey of Cook County every garbage and refuse dump was inspected. The descriptions of the following two dumps are presented here in order to make clear the effect of these dumps upon the rodent problem.

The dump at 138th Street and Ashland Ave. is an abandoned clay hole located in the unincorporated area of Cook County and is at

present used by public agencies and private scavengers as a disposal area for garbage and refuse. It is in close proximity to the city of Blue Island, Ill. This dump is literally undercut with rat burrows, and the highway right-of-way alongside the dump is in the same condition. No control activities of any sort are attempted.

The dump at Lawndale Ave. and U. S. Highway No. 66 is an extremely large dump, possibly three-quarters of a square mile in area, located in McCook, Ill., and utilized by public agencies and private scavengers for disposal of garbage and refuse. There is obviously no lack of food for rats, and burrows are plentiful. Rats were observed running over the dump during the day in bright sunlight. No measures of any kind are attempted for the control of rodents.

There are literally dozens of dumps similar to these areas throughout Cook County, primarily in the unincorporated areas, which are tremendous breeding grounds for rats. No rodent-control activity is maintained in any of these areas. There are no ordinances relating to either rodent eradication or general sanitary conditions in these areas at present.

SUMMARY AND COMMENTS

Review of the findings of this survey indicates that all the areas surveyed are inhabited by rats in varying degrees of infestation, from mild to very heavy. While most of the nine towns and villages surveyed were attempting some form of rodent control and deserve commendation for these attempts, control measures are sometimes conducted by a health department, sometimes by a department of streets, and sometimes by a department of public works. In some areas no control at all is exercised, and the county as a whole has no co-ordinated program for rat eradication. The statements made in the summary of conditions in Chicago apply equally well to the county area.

Furthermore, there seemed to be in all areas a general lack of knowledge concerning the fundamental principles of rodent control, or some other inhibiting factor, which prevented the application of these principles. In most of the areas attempting control the people seem to feel that if garbage cans with a tight fitting lid are provided and if certain areas in which rats have been seen are treated, either with poison or dusted with calcium cyanide, their rat problem will vanish. There is no doubt that these two factors are very important, as part of a comprehensive program, but as long as piles of old stone,

brick, lumber, ashes, and rubbish which provide places in which the rat may live and propagate are allowed to remain, such control efforts are worthless.

Since garbage, ashes, and other items of rubbish originate in private homes and individual business establishments and the area surrounding these places, the co-operation of every individual and business concern is essential to the success of any program of rat control. For this reason, a continuous and effective educational program is necessary to achieve really satisfactory results.

In most areas Red Squill is the poison used. It is the safest of all ratbane in general use, because it contains a very strong emetic, and, therefore, if it is swallowed by children or animals that are capable of vomiting, it generally will be regurgitated before absorption takes place. There is, however, one other very important characteristic of Red Squill which apparently is being overlooked. The active poison in this material is not constant, and it has a tendency to deteriorate. The manufacturers of Red Squill are cognizant of this tendency in the poison and have made an effort to correct it by fortifying all Red Squill before placing it on the market. While this process has helped a great deal to standardize the product, it still will not keep indefinitely. Yet, so far as could be determined, none of the Red Squill now being used in this area is bio-assayed to determine its potency, although some of it has been on hand for a considerable period and probably is no longer very effective.

An effective rodent-control program can be established and maintained in Cook County only if it takes into consideration the fundamental fact that rodents, like all other carriers of disease, have no respect for political boundaries. It is difficult, if not impossible, to conceive that an effective program could be achieved if every one of the eighty-nine municipalities set up the type of comprehensive program suggested for Chicago. It seems apparent that an authority within the county government with power to co-ordinate all rat-control activities into one comprehensive program is as necessary for this phase of environmental sanitation as for other public health services discussed in earlier chapters.

RECOMMENDATIONS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO)

It is recommended that Cook County:

1. Through the Cook County Department of Public Health, shall promote an extensive educational program utilizing newspapers,

radio, public and private agencies, schools, churches, and every practical medium to inform and obtain the support of the public in eradicating the rat.

2. Shall enact an adequate rat-control ordinance patterned after those now in effect in Dallas, Tex., and New Orleans, La., and containing the following salient features:

a) Provision for the administration of the ordinance to be vested in a central authority, which in this case would be the county health department.

b) Requirement that owners or tenants maintain premises free of rats.

c) Provision for compulsory rat stoppage,⁷ where necessary, of existing buildings.

d) Provision for satisfactory storage, handling, and disposal of garbage, rubbish, trash, ashes, and any other material attractive to rats.

e) Provision for satisfactory racking of all lumber, stone, junk, or other material suitable for rat harborage at an elevation of at least 18 inches above the ground.

f) Provision for the raising of wood floors to a distance of at least 18 inches above the ground or the replacement of the same with concrete floors and curtain walls.

g) Provision for the establishment of a revolving fund⁸ to be used for the purchase of materials, payment of salaries and other expenses which may be charged to the property owner for rat-stoppage work

⁷ "Rat stoppage" is a term applied to the treatment of exterior walls, roofs, foundations or openings therein, or any part of a unit containing one or more connected structures. The cost of rat proofing old structures individually is so great as to be generally impractical. Rat stoppage of one or more buildings as a unit, however, may be accomplished at very little expense.

⁸ The method of operation, using the revolving fund, is to select an area in which there is need for rat control work. The area is then surveyed to determine the degree of rat infestation, the amount of work necessary, and the cost of the operation. Owners or occupants of the premises are then contacted, informed of the situation, and requested to sign an agreement authorizing the central authority to do the work and agreeing to pay the cost. The owner should be permitted to do the work personally or by contract subject to the central authority inspection and approval. The cost agreement should include, in addition to rat stoppage and rat eradication, the removal of harborages, the correction of garbage problems, and the supplying of traps, if necessary. If the central authority is requested to do the work, personnel and equipment maintained by the revolving fund are assigned to the operation. When the work is completed, the cost of the project is collected from the property owners or occupants, and the revolving fund is replenished. The revolving fund should be based on \$5,000 for each section containing a population of 50,000. This fund is to be set up as a trust fund, replenished for work performed, and must not be returned to the general fund at the end of the fiscal year if the fund is to be continuous.

when completed, and for the appointment of a trustee over the revolving fund.

h) Provision for a training program to train employees and others in the principles of rat stoppage and rodent control.

3. Through the central authority, shall provide sufficient funds to carry out the provisions of the ordinance and shall maintain an effective organization for the adequate control of rodents.

4. The central authority to draft a standard ordinance pertaining to the compulsory rat proofing⁹ of all new structures or of any portion of a structure being repaired and recommend the passage of such an ordinance by each municipality in Cook County with the power of enforcement in the Building Department or other suitable agency of said municipality.

⁹ A rat-proof structure is one built in such manner and of such material that it is impossible for the rats to have ingress or egress.

SWIMMING POOL SANITATION

by *Raymond I. Leland*

SWIMMING IN ARTIFICIAL AND NATURAL BATHING AREAS is a healthful form of recreation for many people. The possibility, however, exists for the spread of disease in swimming pools and bathing places. Little is known as to the exact manner of the spread of many infections. These infections may be spread by the common use of such appurtenances as walks, towels, suits, or drinking cups, by other public contacts, or through the action of the pool water as an agent for carrying disease germs from one bather to another. Irritations of the mucous membranes of the ear, nose, and throat may result also from excessive use of chemicals in the water.

Because of the health consideration involved, it is recognized that bathing in polluted water is a potential danger, that insanitary conditions surrounding public bathing places are a hazard, and that common decency dictates taking whatever steps are needed to secure public bathing in a clean environment.

The Illinois legislature has passed legislation vesting authority over control of swimming pools and bathing places in the Illinois Department of Public Health.¹ In accordance with another law² the Illinois Department of Public Health issued the bulletin *Minimum Sanitary Requirements for Swimming Pools and Bathing Places*.³ This legislation provides for the promulgation of the specified minimum sanitary requirements, approval of plans and specifications for new pools, and submission of operation and analytical records. Pools constructed after 1931 and not conforming to the requirements are subject to closure by the state's attorneys of the county as provided by the law for the abatement of public nuisance.

The Illinois Department of Public Health also instituted an inspec-

¹ Civil Administrative Code (as amended in 1931), Sec. 55, par. 2, 3.

² An Act for the Control of Swimming Pools (approved July 8, 1931, in force October 1, 1931).

³ Adopted July 15, 1935, revised May 1, 1945.

tion and grading program. Pools are inspected at routine intervals and are given a rating based on pool and bathhouse facilities, water treatment, and operation. A letter system of grades is used, ranging from AA (for the most satisfactory pools) through A, B, C, and D (not approved).

Bathing places may be defined as all bodies of water sufficiently deep for complete immersion of the body and used collectively by many persons for swimming and recreative bathing, together with the shores, buildings, equipment, and appurtenances pertaining to such bathing places. Bathing places may be divided into three classes: (1) natural outdoor ponds, rivers, lakes, and tidal waters; (2) outdoor pools which are partly artificial and partly natural in character; (3) pools, outdoor or indoor, which are entirely of artificial construction.

SWIMMING POOL PROCEDURES AND STANDARDS

This report is primarily concerned with artificial pools. These may be divided into two classes according to the method by which the pool water cleanliness is obtained: (1) "Fill and draw" pools, in which cleanliness of water is maintained by complete removal and replacement of the water at periodic intervals. This type of pool does not meet the *Minimum Sanitary Requirements for Swimming Pools and Bathing Places*, adopted by the Illinois Department of Public Health;

(2) Recirculation pools in which circulation of the water is maintained through the pool by pumps, the water drained from the pool being clarified by filtration before being returned. Properly designed pools with appurtenances utilizing the recirculation method and including among others such items as provisions for complete turnover of the entire contents of the pool every six hours, equipment for adequate disinfection of all pool water, and adequate facilities for bathers, such as showers and lavatories, will meet the requirements of the Illinois Department of Public Health.

The most common and widely accepted method of disinfection of swimming pool water is by means of chlorine gas or hypochlorite solutions. Other methods, such as bromine, ultra-violet rays, ozone, and ionized silver, are in limited use but are not recommended by the Illinois Department of Public Health.

It is essential that tests for residual chlorine, acidity-alkalinity, turbidity, temperature, and bacteriological analyses be performed

routinely at frequent intervals to determine and maintain the desired physical, chemical, and bacteriological characteristics of the water.

CHICAGO

The swimming pools and bathing beaches in Chicago are operated by various governmental and private agencies such as the Chicago Park District, the Bureau of Parks, Recreation, and Aviation, the Board of Education of Chicago, private clubs, and other agencies. The sanitary control measures exercised over these facilities are discussed below.

CHICAGO PARK DISTRICT The Chicago Park District, created by the Park Consolidation Act of 1933, operates all park facilities in Chicago except those under the jurisdiction of the Bureau of Parks, Recreation, and Aviation.

The Chicago Park District is independent of the municipal government of Chicago, except for the power of appointment of the commissioner. This power is vested in the mayor, with the approval of the city council. Thus the park district is similar to a municipality with power to enact and enforce ordinances, rules, and regulations for the government and protection of property under its jurisdiction; to acquire, in a manner fixed by statute, additional lands or other property for park purposes; to levy special assessments for acquiring lands or making improvements for park purposes; and to issue bonds for the purchase of new park lands and their improvement, when such bonds are approved by referendum.

Sanitation in the parks is conducted jointly by the Divisions of Engineering and Recreation of the Department of Operation, the former having major responsibility for this function.

The Chicago Park District operates 135 parks, 12 bathing beaches on Lake Michigan, 40 outdoor swimming pools, 6 indoor swimming pools, and 100 comfort stations in parks and public buildings.

Bathing beaches are open from July 1 to Labor Day, between 9 A.M. and 9:30 P.M. Beach houses with shower and locker facilities are located at six beaches. The remaining beaches have no such facilities.

The 40 outdoor swimming pools are located at 38 parks. All these pools have bathhouse facilities. Five outdoor pools have filter equipment and recirculation and chlorination facilities. Construction of these five pools is said to conform with minimum requirements for swimming pools of the state health department. The remaining 35 outdoor pools, which are the "fill and draw" type, do not conform.

The six indoor swimming pools all have filter equipment and recirculation and chlorination facilities. Construction of these pools is said to comply with the minimum requirements of the state health department.

Operation of the swimming pools is under the direct supervision of the park superintendent in whose park the pool is located. The "fill and draw" pools are drained, cleaned, and refilled twice each week during the swimming season. These "fill and draw" pools are not chemically treated during operation, except for the addition of copper sulphate for algae control. The water is added from the city water supply and has a free fall discharge into the pool. During swimming hours fresh water is continuously added, allowing excess to overflow through the scum troughs. The pools are drained into the Chicago sewerage system. A number of these pools discharge directly into the sewers. It has been alleged, and it seems reasonable to suppose, that at times, when stoppages may occur in the sewerage system and under certain other conditions, sewage may back up into the pools.

An engineer is assigned to the operation of the modern pools with water-treatment facilities, which are operated continuously during the swimming season. The chemical tests are performed at regular intervals throughout the day to insure bactericidal treatment and clarity of the water. Daily records on operation, showing average chlorine residual, hydrogenation concentration, and number of swimmers, are submitted by the engineer to the chief of the Building and Facilities Operating Section.

No routine bacteriological examinations are made of the swimming pool water. The few bacteriological examinations which are made are said to be performed by the Illinois Department of Public Health or by the Chicago Health Department. A study of the reports indicates that the results have been satisfactory, although the sampling technique used was not known.

There is no control over the quality of water in Lake Michigan along the beach. Therefore on quiescent days the beach water is said to be more highly polluted than on windy days, when the waves have a tendency to mix the more highly polluted water with less polluted water from the lake. Beach supervisors are responsible for the sanitation on all the beaches.

Sanitary rules and regulations for swimming pools and beaches are

posted in conspicuous places and are enforced by pool and beach attendants.

BUREAU OF PARKS, RECREATION, AND AVIATION The Bureau of Parks, Recreation, and Aviation is an operating unit of the Department of Public Works of the City of Chicago. The bureau was established under the jurisdiction and control of the commissioner of public works by ordinance of the city council passed January 31, 1917. The administrative head of the bureau is the superintendent, who is responsible to the commissioner of public works.

The Bureau of Parks, Recreation, and Aviation includes the operation of 41 supervised playgrounds and athletic fields, 12 play lots for young children, 5 unsupervised playfields, 2 large bathing beaches, 27 street-end beaches, 3 indoor swimming pools, 17 public bath houses, 95 small parks, 4 community centers, and a municipal host house.

The normal operation schedule of the bathing beaches is from July 1 to September 1, between the hours of 7:00 A.M. and 9:30 P.M. It is estimated that more than seven million persons use the beaches in a season. Beach houses having locker and shower facilities are provided. No beach-house facilities are provided at the two municipal beaches for the street-end beaches. Life guards are on duty during the normal operating season. There is no sanitary control of the quality of the water along the beaches, except that 178 samples of beach water were collected during the season in 1945 by the Water Purification Division of the Department of Public Works of Chicago and examined by the Chicago Health Department. Bacteriological examinations of these samples evaluated the number of coliform organisms in a given volume of water.

Coliform organisms live in the intestinal tract of man and other warm-blooded animals. Their presence in a water supply indicates excreta or sewage pollution and serves as a sanitary pollutional index. The laboratory reported the following coliform indices on the 178 beach samples: 26 samples—10 per 100 milliliters; 82 samples—100 per 100 milliliters; 59 samples—1,000 per 100 milliliters; 11 samples—10,000 per 100 milliliters. Bacteriological analyses alone cannot determine the sanitary condition of beaches; they are only indicative of the water quality at the time of sampling.

The three indoor swimming pools are equipped with filter recirculation systems. Two swimming pools are equipped with chlorin-

ation facilities, and one with bromine for disinfection of the water. The pools are drained and cleaned weekly.

BOARD OF EDUCATION OF CHICAGO

The Board of Education maintains and operates facilities for physical education instruction and recreation. There are at the present time sixty-nine supervised playgrounds and forty-four swimming pools. The swimming pools are under the operation of the engineer-custodian of the school in which the pool is located.

The 44 swimming pools are all indoor pools and are located in 37 high schools, 2 junior colleges, 3 elementary schools, and 2 schools for crippled children.

All the pools, with the exception of three fill and draw pools, are of the recirculation type. Disinfection of pool water is by means of chlorine applied continuously as a gas or in some cases intermittently as a hypochlorate solution. The Bureau of Engineering handbook recommends an average chlorine residual of 0.5 parts per million in the pool water. Each pool is provided with equipment for performing residual chlorine and hydrogenation concentration tests. The maintenance of operation records is not required.

Samples for bacteriological analysis are collected weekly by samplers from the Board of Education laboratory maintained at the Chicago Normal College, where the samples are analyzed. The samplers do not make a residual chlorine test at the time of sample collection. Samples are not collected in sodium thiosulphate treated bottles to neutralize the disinfecting agent, and thus the disinfectant continues to destroy bacteria which may be present in the sample before the bacteriological analysis is made. The true sanitary quality of the water at the time of sampling is not obtained by the use of this sampling procedure.

OTHER SWIMMING POOLS The state and the Federal governments operate three indoor swimming pools with recirculation and disinfection equipment in Chicago.

Private agencies own and operate 74 indoor and 3 outdoor pools in Chicago. These are located in private clubs, settlements, boys' clubs, hotels, hospitals, and recreation and health clubs. The bulletin *Data on Illinois Swimming Pools*, issued June, 1946, by the Illinois Department of Public Health, lists 51 private swimming pools equipped with recirculation systems and 4 pools of the "fill and drain" type.

No information as to type was listed for the remaining pools in Chicago. The methods of disinfection used in the pools included chlorine gas, hypochlorite solutions, electric chlorination, ultra-violet rays, and bromine.

Only four swimming pools were licensed in 1946 under the provisions of the Chicago Swimming Pool Ordinance.⁴ The enforcement of the ordinance was transferred from the Board of Health to the building commissioner by the Chicago City Council in January, 1946. Inspection is made only upon the original application for license. No inspections of licensed or unlicensed swimming pools were reported by the building commissioner.

During 1945 the laboratory of the Chicago Health Department examined 215 swimming pool samples submitted by private agencies. The samples were from the following installations: 155 from Y.M.C.A. pools, 35 from one hotel pool, 20 from one athletic club pool, and the remaining 5 from pools in two clubs and a hotel. Of the 215 samples examined, 170 were satisfactory, having no coliform organisms. The coliform values in the remaining samples ranged from 1.8 to 250 coliform organisms per 100 milliliters.

COOK COUNTY (EXCLUSIVE OF CHICAGO)

The swimming pools in Cook County, exclusive of Chicago, are operated by the Forest Preserve District of Cook County, various municipal pool and school authorities, and by private agencies.

FOREST PRESERVE DISTRICT OF COOK COUNTY The Forest Preserve District of Cook County was organized in February, 1915, and comprises 36,500 acres of land. Many recreational facilities such as golf courses, shelter houses, ball diamonds, picnic areas, and swimming and wading pools are operated by the Forest Preserve District.

Three outdoor swimming pools provided with recirculation and chlorination equipment are operated by the Forest Preserve District.

Samples are collected and analyzed twice weekly during the operating season. During 1945, twenty-five bacteriological samples examined by the Chicago Board of Health showed satisfactory results. These pools were built in accordance with state approved plans.

OTHER SWIMMING POOLS IN COOK COUNTY There are 67 swimming pools in Cook County exclusive of Chicago. Of this number 40 are privately operated, and 27 are municipally operated. Private pools owned and operated for a family and guests are not included,

⁴ Chapter 157 of the Municipal Code of Chicago.

The outdoor pools, of which there are 43, have only a seasonal attendance. The 24 indoor pools are mainly in clubs and schools and have a year-around attendance.

The ratings of the pools in Cook County based on the most recent state inspections are listed in Table 62. It will be noted from the table that 43 pools were approved, 8 were classified D or not approved, and 16 pools were not graded. Six of the 67 pools are of the "fill and draw" type. All these pools were installed before the passage of the state legislation requiring submission and approval of plans before construction.

TABLE 62. RATINGS FOR SWIMMING POOLS IN COOK COUNTY
(EXCLUDING CHICAGO)

| GRADE | TOTAL | TYPES OF POOLS | |
|--------------|-------|----------------|------------------|
| | | <i>Private</i> | <i>Municipal</i> |
| AA | 9 | 4 | 5 |
| A | 15 | 9 | 6 |
| B | 16 | 10 | 6 |
| C | 3 | 1 | 2 |
| D (not app.) | 8 | 7 | 1 |
| Not graded | 16 | 9 | 7 |
| All grades | 67 | 40 | 27 |

The principal method of disinfection of swimming pool water is by means of chlorination. Some type of chlorination is used by 50 of the 61 pools listed as having disinfection of pool water. The remaining pools use bromine or ultraviolet rays.

Sampling of these pools for bacteriological examination has been made intermittently, both by the state and by other agencies. In 1945 only 25 samples were submitted to the Illinois Department of Public Health Laboratory in Chicago, and 44 Cook County pool samples were submitted to the state public health laboratory at Springfield. The health department laboratories in Oak Park and Evanston analyzed samples for pools in those towns. Some samples were analyzed in private laboratories for specific pools. No routine sampling program for the examination of swimming pools has been scheduled by the state health department.

COMMENTS

CHICAGO There are 173 swimming pools in Chicago, of which 46 are owned and operated by the Chicago Park District, 47 by the City of Chicago, 3 by state and Federal agencies, and 77 by private

agencies. These pools can become a means of providing a healthful form of recreation to many thousands of people if they are properly equipped and operated. Because of the health consideration involved, these bathing places should be under careful surveillance of public health authorities and suitable sanitary control.

There is, however, very little sanitary control exercised over the swimming pools in Chicago. The provisions of the municipal ordinance regulating swimming pools do not meet the minimum sanitary requirements for swimming pools and bathing places adopted by the Illinois Department of Public Health or the "Recommended Practice for Design, Equipment, and Operation of Swimming Pools and Public Bathing Places" published in the official 1942 report of the American Public Health Association. By action of the city council the enforcement of the municipal swimming pool ordinance was transferred from the Board of Health to the commissioner of buildings. Only four swimming pools were licensed under the provisions of the ordinance, and no inspections were performed by the building department. No inspections or sanitary controls are exercised by the city over the large number of unlicensed pools. The state health department has made inspections of pools within Chicago only upon specific request. The swimming pools in Chicago have not been given a sanitary rating by the state.

Bacteriological examinations of samples were made routinely for the pools operated by the Board of Education of Chicago, but the method of collection did not provide accurate information as to the quality of the water. Only intermittent samples were analyzed for a few other swimming pools in the city. No routine sampling program has been arranged. Bathing beaches in Chicago are sampled by the city to determine the bacteriological quality of the beach water. These analyses indicate that during certain periods the water pollution is greater than the recommended standards for bathing areas. The bacteriological analyses, although having some value as an index of the water quality at the time of sampling, are of little value as measures of the freedom of such water from harmful pollution.

A program to evaluate the sanitary facilities at all the bathing beaches is needed. Adequate sanitary facilities, including toilets, showers, and other appurtenances, and an adequate bather-control program are essential in order to eliminate unnecessary and dangerous pollution. Polluted water can become the agent for carrying disease organisms from one bather to another. Because the arrangements and

equipment of a well-operated, properly designed artificial swimming pool are such that the water quality can be controlled and maintained in a satisfactory condition, it is possible for pools to provide a greater degree of safety to the health of the bather than do the city bathing beaches.

COOK COUNTY There are sixty-seven swimming pools in Cook County outside Chicago. The majority of these pools are operated by private agencies. A minimum of sanitary control is exercised over the operation and the maintenance of these pools. An inspection and rating program instituted by the Illinois Department of Public Health through the Cook County Department of Public Health was interrupted because of wartime shortage of personnel. According to the most recent inspections, there were eight nonapproved pools in operation and sixteen pools that were not rated.

During 1945 only sixty-nine samples of water from swimming pools in Cook County, exclusive of Chicago, were submitted to the state health department laboratories for examination. Some samples were analyzed in municipal health department and private laboratories.

RECOMMENDATIONS

It is recommended that:

1. The Chicago City Council shall adopt an ordinance establishing minimum sanitary requirements for all swimming pools in Chicago, which requirements shall be at least as stringent as the *Minimum Sanitary Requirements for Swimming Pools and Bathing Places* promulgated by the Illinois Department of Public Health.
2. The Chicago Health Department shall be made responsible for enforcing the requirements of the ordinance.
3. The Chicago Park District shall operate and maintain the swimming pools under its jurisdiction in accordance with the *Minimum Sanitary Requirements for Swimming Pools and Bathing Places* adopted by the Illinois Department of Public Health.
4. The Cook County Department of Public Health shall enforce more adequately the requirements of the Illinois Department of Public Health for all swimming pools in Cook County, exclusive of Chicago.
5. All swimming pools in Chicago and Cook County shall be inspected by the responsible agency routinely, and samples of swimming pool water shall be submitted for bacteriological examination

on routine schedules to be formulated by the Illinois Department of Public Health.

6. All bathing beaches in Chicago shall be provided with adequate sanitary facilities and bather-control programs shall be encouraged.

7. Adequate personnel shall be provided for the Chicago Health Department and the Cook County Department of Public Health to carry out these recommendations.

SMOKE ABATEMENT

by *Ralph E. Tarbett*

ATMOSPHERIC POLLUTION by smoke and fumes is an expensive and unhealthful nuisance. Rosenau, in *Preventive Medicine and Hygiene*,¹ states:

The prevention of the smoke nuisance is an engineering problem in sanitation. Smoke injures health and affects comfort both directly and indirectly. It shuts out the light, soils with soot and deters the opening of windows to let in fresh air. The economic losses from the dirt and erosion are enormous. Smoke hangs over cities like a pall to keep out visible light and ultraviolet rays. It is irritating to the eyes, skin, and mucous membranes. There is a correlation between diseases of the respiratory tract and smokiness of cities. Smoke contains tar which is a source of irritation although not present in sufficient quantities to cause cancer. Even if it were not injurious to health, smoke is so evident a nuisance that communities are justified in determined effort to check and prevent this abomination. The control of urban smoke is part of the common problem of cleanliness and decency.

To reduce air pollution and keep impurities at a minimum in a city such as Chicago, the major polluttional contributor, smoke discharged by heating units, industrial and power plants, and railroad locomotives, must be controlled and reduced. The problem of control is difficult because of the very large number of potential smoke contributors in the city: about four hundred thousand buildings, approximately 1,200 locomotives, 25 roundhouses, 450 steamship arrivals per season, plus other miscellaneous sources.

Smoke abatement is mainly a question of education in the use of proper firing equipment. The extensive use of highly volatile coal in Chicago, because of the city's close proximity to a large bituminous coal supply in Illinois, Indiana, and Kentucky and the relatively low cost of this type of coal, has made the problem of smoke abatement

¹ Milton J. Rosenau, *Preventive Medicine and Hygiene*, 6th ed.; New York and London, Appleton-Century Company, 1935.

more difficult. Proper equipment and careful operating control are required to burn this type of fuel without smoke.

Other factors or agents responsible for air pollution are: dust, waste products from heating and manufacturing operations, internal combustion, and Diesel engines. There is in addition the constant accumulation of miscellaneous grime and debris throughout the city.

The Department of Smoke Inspection and Abatement is organized under the Municipal Code of Chicago as a separate department responsible to the mayor and the city council. It is charged with the following duties: prevention of emission of dense smoke from the chimneys of buildings, locomotives, boats, and various portable and stationary equipment; prevention of nuisances caused by discharge from chimneys of ashes, soot, fumes, or obnoxious gases, dirt, or other material; supervision of installation or reconstruction of heating, power, and fuel-burning equipment; and studies of dust-fall. During 1945 the department had under observation more than 275,000 chimneys, received 1,190 complaints, reported 2,266 locomotives emitting dense smoke, made 38,721 instructional visits, and inspected 32,081 furnace units.

HISTORY AND DEVELOPMENT OF SMOKE INSPECTION AND ABATEMENT, 1881-1946

The first smoke ordinance for the city of Chicago was passed by the council on April 18, 1881. This ordinance declared emission of dense smoke from the smokestack of any boat, locomotive, or chimney within the city, other than that of a private residence, a public nuisance. From 1881 to 1907 activities were more or less limited to smoke inspection. The first smoke inspector, with five assistants, worked under the Sanitary Bureau of the Health Department. In addition to smoke inspection, the inspectors were expected to check other violations of the sanitary ordinances. In 1903 boats and locomotives were considered violators whenever they made any dense smoke. At that time chimneys of buildings were allowed emission of dense smoke for a period of 6 minutes each hour. Fines for violations ranged from \$10 to \$100.

In 1907 a new ordinance was adopted, establishing co-operation between the citizens and the city department. This ordinance also provided that the smoke inspector should be a mechanical engineer qualified by technical training and experience in the theory and

practice of the construction of steam plants and in the theory and practice of smoke abatement. Under the new ordinance permits were issued for all new steam plants and for reconstruction of old ones. The department staff from 1907-11 included the following: smoke inspector, chief assistant smoke inspector, 13 deputy smoke inspectors, and 14 assistant smoke inspectors.

Table 63, adapted from one prepared in 1910, shows seven classes of coal consumers and their standing as to smoke contribution. Classes 1 through 5 include stationary plants.

TABLE 63. CLASSES OF COAL CONSUMERS BY PERCENTAGE OF TOTAL SMOKE CONTRIBUTION^a

| <i>Class Number</i> | <i>Description</i> | <i>Percentage of Total Smoke</i> | <i>Remarks</i> |
|---------------------|----------------------------|----------------------------------|---|
| 1 | Central District | 6.0 | Area bounded by Halsted, 22d St., Chicago Ave., and Lake St. |
| 2 | Miscellaneous power plants | 30.0 | High-pressure boiler plants, except those in Central District |
| 3 | Flats | 2.5 | Low-pressure boiler, 3 flats or more |
| 4 | Domestic | 2.0 | Homes and 2 and 3 flat buildings |
| 5 | Special furnaces | 12.5 | All, other than steam-boiler furnaces |
| 6 | Railroads | 43.0 | In city limits |
| 7 | Boats | 4.0 | In city limits |
| Total | | 100.0 | |

^a Adapted from table prepared in 1910.

Although, as this table indicates, railroads were responsible for a considerable portion of the smoke, they were also actively engaged in its reduction. In 1910 thirty smoke inspectors were employed by the railroads for the purpose of observing and instructing engineers and firemen in proper firing methods.

Following the period 1907-11 the smoke abatement department reported that the smoke nuisance had been reduced one third. Inspection was limited at that time to an area of 54 square miles, bounded by Roscoe Street, Central Park Avenue, 59th Street, and Lake Michigan, but supervision of new coal-burning installations covered the entire city.

In 1911 the smoke abatement department recommended the following measures as a practical means by which the reduction of smoke could be accomplished: (1) electrification of railroads; (2) the installation of central station power and heat; (3) the burning of hard coal by boats; (4) the use of gas and coke for heating; and (5) complete electrification of all power. The annual per-capita cost

of smoke damage at that time, 1911, was \$8.00, and the total damage in Chicago was estimated at \$17,600,000.

During the period 1919-27 the commissioner of health was authorized to direct the work of the Department of Smoke Inspection. The total yearly smoke observations recorded by the department from 1919 to 1925 ranged from 8,203 to 26,167. On September 23, 1919, the present Railroad Smoke Abatement Board was organized. It was composed of railroad officials, representatives of brotherhoods of locomotive engineers and firemen, and representatives of the smoke inspection forces employed by the railroads, and it was headed by the "City Deputy Smoke Inspector in Charge." Since the establishment of the board there has been marked improvement within the city limits. In August, 1926, the Illinois Central yielded to public clamor and changed partially from steam to electric motive power. The Chicago and Northwestern Railway started operating Diesel engines for moving freight and for switching purposes in their Kinzie Street Terminal as early as 1925. Five roundhouses had also been equipped to eliminate the smoke nuisance. However, the air in the vicinity of the roundhouses still remained polluted.

During 1925 the Great Lakes Dredge and Dock Company, the largest operators of tugs and construction equipment, changed the motive power on approximately 50 percent of their tugs, from coal-burning furnaces to Diesel engines and oil-burning equipment.

In 1925 studies of dust-fall were begun in Chicago to determine what percentage of the foreign matter in the air was of fuel origin and to compare dust-fall during various months. Material collected in dust surveys includes discharges from chimneys, street and roof dust, erosion material particles resulting from litter scattered in streets, alleys, and vacant lots, from the razing of old buildings and the erection of new ones, and other foreign matter. The unit of measure used in dust survey reports is "tons per square mile per month." Monthly averages by station for the year 1925 varied from a minimum of 59.51 tons per square mile at Laramie and Harrison to a maximum of 260.03 tons per square mile at Twelfth and Wabash. The average dust-fall per station was 124.52 tons per month.

An ordinance establishing the present Department of Smoke Inspection and Abatement was passed December 31, 1928. The organization of this department and its current activities will be discussed later in the report.

In 1933 the Civil Works Administration, in co-operation with the Department of Smoke Investigation and Abatement, conducted a comprehensive smoke abatement investigation for the city of Chicago. An intensive drive against plants emitting smoke was carried on by a corps of engineers and others totaling 168 persons. An effort to educate owners and operators in the proper methods of firing and close supervision of outlying territories constituted the major phases of the work. Tables 64-66, adapted from tabulations in the report of the C.W.A. investigation, present some of the findings.² Table 64 shows the density of the smoke emitted by various classes of fuel consumers for the years 1911, 1915, 1931, and 1933. Table 65 shows the consumption of fuel of specified types by the various classes of consumers in 1933. This information was used in connection with the smoke density of each class to calculate the relative standing in percentage of total smoke made by each class for the year 1933. Table 66 presents the percentages for 1933, together with those for the years 1911 and 1915. The following excerpt from the report indicates some of the changes that have taken place.

It will be noted that there is a striking change in the relative standing of the different divisions over the years from 1911. The railroads made the most notable advancement, from 43 percent of the entire problem in 1911, to only 2.5 percent in 1933. This shows what can be done through a steady consistent effort over a period of years. During these years the railroads have constantly improved their equipment and have maintained strict discipline which has been rewarded by their excellent showing.

On the other hand the Domestic and Apartment House Class has had the benefit of little if any additional equipment during the years since 1911 and the immense number of plants and people involved has precluded any systematic education or discipline.

The result has been a shifting of the standing of those classes until their importance in the future smoke problem of the city far outshadows any other class.

Although a comprehensive smoke survey was conducted in 1939, the data have not been assembled completely. It is reported by officials of the smoke department, however, that the railroads are now contributing approximately 25 percent of the total smoke in the city. This substantial increase over the 1933 percentage indicates the need of a strong effort by the railroads to restore their standing to that of prewar years. The "apartment house class," however, has ef-

² The tables have been numbered, table titles added, and the set-up of the tables slightly changed to conform with the style of other tables in this volume.

TABLE 64. SMOKE DENSITY BY CLASSES, 1911, 1915, 1931, 1933^a

| CLASS OF FUEL CONSUMER | PERCENTAGE BY YEAR | | | |
|-------------------------------------|--------------------|-------|------|------|
| | 1911 | 1915 | 1931 | 1933 |
| Domestic | 3.0 | 1.62 | .. | 3.2 |
| Apartments and large heating plants | 3.0 | 1.62 | .. | 5.4 |
| Industrial | 6.5 | 10.42 | .. | 6.2 |
| Central District | 3.75 | 10.42 | .. | 4.7 |
| Metallurgical and special furnaces | 20.0 | 13.27 | .. | 12.6 |
| Locomotives | 22.3 | 18.01 | .95 | 4.5 |
| Boats | 25.0 | 14.64 | .. | 11.5 |
| Oil burning equipment | ... | ... | .. | 0.2 |
| Gas and coke plants | ... | 0.77 | .. | ... |

^a Adapted from table in report of CWA Smoke Abatement Investigation of Chicago.

TABLE 65. CONSUMPTION OF FUEL IN 1933^a

| CLASS OF FUEL CONSUMER | CONSUMPTION OF FUEL BY CLASSES | | | |
|-------------------------------------|--------------------------------|-------------|---------------|--------------|
| | Coal (tons) | Coke (tons) | Oil (gallons) | Gas (therms) |
| Domestic | 3,794,560 | 601,000 | 80,000,000 | |
| Apartments and large heating plants | 5,550,387 | ... | 18,100,000 | 176,110,740 |
| Power plants | 7,261,646 | ... | 37,519,881 | 14,191,214 |
| Central district | 1,245,608 | 2,980 | 4,373,361 | 1,082,676 |
| Metallurgical and special furnaces | 517,180 | 914,330 | 57,086,798 | 14,726,110 |
| Locomotive | 1,102,837 | ... | 426,213 | ... |
| Boats | 126,318 | 32 | 526,747 | ... |
| Total | 19,598,536 | 1,518,342 | 198,100,000 | 206,110,740 |

^a Adapted from Table in report of CWA Smoke Abatement Investigation of Chicago.

TABLE 66. PERCENTAGE OF TOTAL SMOKE MADE BY EACH CLASS OF FUEL CONSUMER, 1911, 1915, 1933^a

| CLASS OF FUEL CONSUMER | STANDING IN PERCENTAGE OF TOTAL SMOKE | | |
|-------------------------------------|---------------------------------------|--------|--------|
| | 1911 | 1915 | 1933 |
| Domestic | 2.0 | 3.93 | 20.4 |
| Apartments and large heating plants | 2.5 | 3.93 | 43.0 |
| Industrial | 30.0 | 44.49 | 25.4 |
| Central District | 6.0 | ... | 5.1 |
| Metallurgical and special furnaces | 12.5 | 28.63 | 2.4 |
| Locomotives | 43.0 | 22.06 | 2.8 |
| Boats | 4.0 | 0.74 | 0.7 |
| Oil-burning equipment | ... | ... | 0.2 |
| Gas and Coke plants | ... | 0.15 | ... |
| Total | 100.00 | 100.00 | 100.00 |

^a Adapted from Table in report of CWA Smoke Abatement Investigation of Chicago.

fects considerable improvement since 1933, as a result of systematic effort and smoke abatement education among the organized janitors.

CURRENT SMOKE ORDINANCE AND ORGANIZATION OF DEPARTMENT
OF SMOKE INSPECTION AND ABATEMENT

The ordinance of December 31, 1928, provided for the organization of the present Department of Smoke Inspection and Abatement. A deputy smoke inspector is in charge of the work. A Smoke Inspection and Abatement Commission is attached to the department. This commission is composed of the president of the Board of Health as chairman, the commissioner of buildings, the corporation counsel, the commissioner of police, and the chief inspector of the Department of Steam Boilers, Unfired Pressure Vessels and Cooling Plants.

Chapters 17-1 to 17-4 and 99-62 to 99-74 of the Municipal Code of Chicago include the smoke ordinance and other ordinances relating to fuel-burning devices.

Chapter 17-2 provides that it shall be the duty of the Smoke Inspection and Abatement Commission to establish "standards, rules and regulations" for the inspection and control of the installation, reconstruction, alterations, repairs, and improvements of heating, power, and fuel-burning equipment; the prevention and abatement of smoke and noxious gases and nuisances arising therefrom; the examination and approval of all plans of all heating, power, and fuel-burning installations and of all smoke prevention and abatement installations installed or reconstructed in any building or location, or on any premises within the jurisdiction of the city.

Chapter 17-3 provides that it shall be the duty of the deputy smoke inspector in charge, under the direction and supervision of the Smoke Inspection and Abatement Commission, to supervise the work of all employees of the department and to carry into execution the laws and ordinances pertaining to smoke prevention and abatement.

The smoke ordinance gives the department authority to prevent the emission of dense smoke from the chimneys of buildings, locomotives, boats, and various equipment used in construction work or from open fires; to prevent nuisances caused by discharge from chimneys, of ash dust, soot, cinders, and fumes or other material or noxious gases; to supervise and regulate the installation or reconstruction of heating, power and fuel-burning equipment, and to make annual inspections of fuel-burning equipment.

The 1946 annual appropriation ordinance provided for 1 deputy smoke inspector in charge, 1 supervising smoke inspector, 10 junior mechanical engineers, eighteen junior combustion engineers, 7 smoke observers, and 7 clerks.

Under the present inspection and control plan the city is divided into seven districts, for each of which a smoke observer is responsible. The duties of this group are: to observe all chimneys in their districts and to report all dense smoke, to serve field notices on violations noticed; and to report smoke nuisances when observed. Each district is subdivided so that densely populated, commercial, and industrial areas receive more smoke inspection service per unit area than sparsely populated and residential areas. For example, in District 1 the smoke observer spends as much time in section A, which extends from Chicago Avenue to North Avenue, as he does in section D which extends from Lake Street to Madison Street.

Some of the smoke observer districts are so large that one smoke observer working five days per week cannot possibly observe all smoke violations and smoke nuisances in his entire district on a daily schedule. In fact, in the three districts which comprise the southern and the northern sections of the city considerable time is needed for thorough canvass and observation without taking into consideration the time consumed in serving field notices and investigating complaints. Some attempt is made by the department to stagger observation hours to cover the early morning daylight hours and the evening hours, but with the limited personnel, observation on Saturdays, Sundays, and holidays and during early morning and evening hours is very scant. As smoke created during these periods is as objectionable as smoke created at other times, the department should be staffed with enough smoke observers to include these periods in their regular smoke-observation control plan. Superficial smoke observations made by the Chicago-Cook County Health Survey in District 3 (bounded by 39th Street on the north and Halsted Street on the west) verify the inadequacy of smoke control as a result of the inadequate number of inspectors assigned to this work. Although the dumps in this district are almost constant smoke contributors, they were not recorded as such in the smoke department.

The technically trained junior mechanical engineers are in charge of six districts, which include all the territory in the seven districts of the smoke observers. The duties of these district engineers include: observation of chimneys; investigation of complaints of smoke

nuisance received by the department from citizens; investigation of nuisances observed in field canvass work; visiting power and heating plants to advise and instruct engineers and firemen and plant owners in the proper steps to be taken to prevent violations; inspection of new and reconstructed burning equipment; familiarizing themselves with details of all plants in their districts; recommending suits or other disposition of violations.

The junior combustion engineers, in contradistinction to the junior mechanical engineers, are not professional engineers. Their duties are principally the annual inspection of existing fuel-burning equipment and instruction and consultation with regard to proper methods of smoke control.

ACTIVITIES OF DEPARTMENT

SMOKE OBSERVATION *Stationary plants.*—During 1945 the department had under observation 775,265 chimneys and reported that 1,998 emitted dense smoke. Of this number, 585 were violating the smoke ordinance. A violation by stationary plants results when a chimney emits more than six minutes of dense smoke during a period of one hour. Since January, 1946, an amendment to the smoke ordinance classifies a dense smoke as a smoke of a shade or density greater than "No. 3" on the Ringelmann Chart published by the United States Bureau of Mines. Although the density classification of the Ringelmann Chart has been used by the department for some time, its incorporation into the ordinance now gives definite legal status to this method of classification.

Where violations or dense smoke are noted, the department sends written notices to the responsible individual to appear for a hearing at the department's office so that the cause of smoke may be determined and some assurance that corrective measures will be taken to prevent further emissions may be obtained. At the time of the hearing the owner or agent is given technical assistance by the department in an effort to prevent smoke. A second violation, within thirty days, results in a suit notice.

From March 12, 1946, when smoke department violation suit notices were made payable in the municipal "Cafeteria Court," to June 4, 1946, the disposition of 145 notices issued by the smoke department were as follows: 123 paid fines in "Cafeteria Court," 14 pending in court, and 8 still open. This record of nearly 90 percent

enforcements indicates that the use of the "Cafeteria Court" for smoke violations has been effective, and that the smoke department officials have been relentless in their efforts.

Railroad locomotives.—In 1945 2,266 locomotives were reported emitting dense smoke, and 1,750 of this number were reported as violating the smoke ordinance. A violation is recorded when it is reported (1) that a locomotive in service has emitted one minute or more of dense smoke or (2) that an engine at the round-house emitted dense smoke aggregating more than six minutes, while a new fire was being built or during the period of "fire-cleaning."

Reports of smoke-ordinance violation are referred to the Railroad Smoke Abatement Board, which sends a notice of the violation to the railroad company owning the offending engine. A statement of the cause of the violation, obtained from the engineer and the fireman operating the engine, is then presented to the board by a representative of the company. A first offender receives a cautionary letter. If there is a second violation, the board recommends that the railroad takes disciplinary action. Demerit marks, suspension, or dismissal from service are measures which are taken by the railroad companies against the individual operators responsible for repeated violations.

The substantial increase (approximately 40 percent) of railroad violations reported last year over the number reported during the prewar years is due, according to reports of railroad officials, to inexperienced operators and labor, poor quality of coal, equipment defects, increased engine movements, and the use of engines not equipped with a standard smoke-prevention apparatus. This recent lack of smoke control by the railroads should be rectified so that their prewar standing can be attained again. At present, 15 percent of all the Diesel locomotives in the United States are operating in the Chicago area, and this extended use of Diesel power, especially in switching service, should aid the railroad smoke abatement program materially.

SMOKE DEPARTMENT COMPLAINTS In 1945 the department received 1,190 complaints of smoke nuisance due to emission from chimneys or open fires of smoke, fumes, noxious gases, soot, and fly ash. Smoke abatement was obtained in 1,137 cases by the following methods: chimneys built higher, 149; fuel changed, 80; equipment changed, 55; operation changed, 853.

SUPERVISION OF NEW PLANTS AND ANNUAL INSPECTION
OF FUEL-BURNING EQUIPMENT

Since 1907 the code has authorized the smoke abatement department to exercise supervision over the installation and the reconstruction of fuel-burning equipment. In this way the details of equipment planned for a new boiler plant can be studied before the plants are built, and precautions can be taken to construct them so that smoke may be reduced. When building plans are submitted, items such as chimney height and cross section, combustion space, floor space, and ventilation are checked.

Permits are issued by the department for all new fuel-burning plants and for the reconstruction of old ones. After the issuance of a permit, the construction of boiler-plant equipment is inspected and the operation of the plant under normal load observed to check the effectiveness of construction and operation in preventing the emission of dense smoke. A certificate is then issued certifying that the plant meets plan requirements and can operate without violating the smoke ordinance.

In January, 1938, an amendment to the smoke ordinance provided for annual inspections of fuel-burning equipment and set up a schedule of fees for these inspections based on the capacity of the equipment inspected. This method enables the department to reinspect equipment originally approved to make sure that it has not been allowed to deteriorate or to get into a condition which results in incomplete combustion of fuel and production of smoke. If it is found at the annual inspection that the equipment is in such condition that it cannot be operated without emission of dense smoke, the ordinance provides for the revocation of the certificate allowing the plant to operate. In 1945 32,081 furnace units were inspected.

EDUCATIONAL PROGRAM The smoke-abatement program conducted by the Department of Smoke Inspection and Abatement is one of the most important phases of smoke-control work. It includes the following: (1) individual instruction to engineers and firemen of plants reported smoking; (2) individual instruction to owners and operators at violation hearings; (3) class instruction for janitors and firemen; (4) distribution of bulletins to aid fuel users in burning fuel properly; (5) class instruction to locomotive firemen; (6) publicity in the daily press and in publications by civic groups.

DUST-FALL SURVEYS Since 1925 dust-fall surveys have been made to determine progress in reducing air pollution. At present

the department makes monthly analyses of dust-fall precipitation at twenty-two stations selected so as to be representative of a district. The data expressed in tons per square mile per month measure the amounts of dust precipitation in various sections of the city.

Monthly averages for the year 1945 varied from a minimum of 24.06 tons per square mile at 7350 Pratt Boulevard to 212.10 at 33 North La Salle Street. The average dust-fall in Chicago per station was 68.40 tons per square mile per month. A comparison of this figure with the average of 124.52 for the year 1925 indicates a marked and decided improvement in air-pollution reduction in the past two decades.

Table 67 lists the monthly average for 1945 for all locations expressed in tons of dust per square mile per month.

TABLE 67. DUST-FALL IN CHICAGO IN 1945 BY STATION

| <i>Ward</i> | <i>Location of Test Station</i> | <i>Tons per Square Mile per Month</i> |
|-------------|----------------------------------|---|
| 1 | Fair Store | 163.85 |
| 1 | 33 North LaSalle St. | 212.10 |
| 1 | 2135 South Michigan Ave. | 62.04 |
| 4 | 42d Street and St. Lawrence Ave. | 75.7 |
| 5 | 1600 East 56th St. | 113.67 |
| 7 | 73d St. and Jeffery Ave. | 60.21 |
| 10 | 89th St. and Escanaba Ave. | 147.54 |
| 17 | 77th St. and Peoria St. | 59.54 |
| 13 | 62d St. and Linder Ave. | 79.64 |
| 15 | 6155 South Western Ave. | 59.04 |
| 19 | 115th St. and Leavitt St. | 35.71 |
| 9 | 114th St. and Eggleston Ave. | 60.01 |
| 44 | 2007 North Orchard St. | 71.54 |
| 46 | 851 Waveland Ave. | 40.44 |
| 34 | 1711 North California Ave. | 38.12 |
| 22 | 1640 South Albany Ave. | 61.57 |
| 20 | 1029 West Harrison St. | 68.90 |
| 37 | 5511 West Washington St. | 66.84 |
| 41 | 7350 Pratt Blvd. | 24.06 |
| 40 | 3539 Grace St. | 55.07 |
| 35 | 2727 North Long Ave. | 36.83 |
| 50 | 6610 Greenview Ave. | 30.45 |
| | Average per station | 68.40 |

Data from other cities comparable to Chicago were not available in a form that would permit exact comparison. Cincinnati, where a smoke-abatement program has been under way for many years, reported an average dust-fall of soot and insoluble solids for 1945 of 37.7 tons per square mile, with a range from a maximum of 207.9 tons to a minimum of 6.2 tons. A report from Detroit, covering the period of September 1 to December 31, 1945, gave the dust-fall in

the densely populated area as 286.8 tons per square mile per month. This figure is somewhat higher than that reported for similar areas in Chicago for the same period.

Analysis of dust-fall surveys for the years 1934 to 1945 indicate that considerable progress was made in smoke abatement until 1940, but that, as would be expected, retrogression occurred during the 1940-45 period. With the renewal of more active control, now possible, the ground lost during the war period should be regained during the next two or three years.

The practice of operating just within the smoke ordinance is a big factor in the smoke problem of Chicago. In many plants engineers or firemen make little effort to prevent the emission of heavy smoke in periods aggregating less than 6 minutes in an hour. Many operators also seem to think that their obligations cease when they function within the ordinance and therefore make little attempt to reduce light continuous smoke. However, light continuous smoke from a stack may contribute more pollution to the atmosphere than the emission of heavy smoke from the same stack for relatively short periods.

Fires at the numerous refuse dumps distributed throughout the city contribute considerably to the atmospheric pollution at times. The dump on the west side of Wolf Lake is a notable example. This dump is being operated as a fire dump and is constantly burning over a considerable area. Smoke from this dump at the time of observation covered a considerable area in the southern part of the city. Such conditions should be corrected even if the smoke density falls below that established by ordinance for short intervals.

The use of more intelligent operating practices in buildings, as well as other common-sense measures to control air pollution, would result in eliminating a major portion of the solids contained in the Chicago atmosphere. A few practices that are major contributors are the following: discharging fly ash out of stack; operating a steam ash ejector which is vented into boiler stack; burning rubbish in base of stack with damper wide open; operating just within the smoke ordinance; failure to remove dirt accumulated on roofs; failure to remove dirt, ashes, rubbish, and foreign materials in enclosed space; failure to cover trucks hauling coal, ash, and rubbish.

Sunshine hours reported by the U. S. Weather Bureau show that in 1945 Chicago received only 56 percent of the possible hours of sunshine. While smoke alone is not responsible for this condition,

combined with fog and partial cloudiness it is a factor in producing the low sunshine record.

East winds in Chicago generally aid in clearing the atmosphere of pollution in the downtown area of the city, but, unfortunately, the percentage of hours during which east winds blow is relatively small, only 6.9 percent in 1945. Moreover, during the colder seasons the moisture-laden winds from the lake are frequently too light to dispel the smoke, and a condition favorable to fogs results. Southeast and east winds carry polluted air from the Indiana portion of the Calumet industrial region to the southern part of Chicago. The Chicago Department of Smoke Inspection and Abatement has noted evidence of this pollution as far north as Jackson Park. An average dust-fall of 147.54 tons per square mile per month in 1945 at Eighty-Ninth Street and Escanaba Avenue is also indicative of excessive air pollution in the southeastern portion of the city adjacent to the Indiana portion of the Calumet industrial region.

The Chicago Department of Smoke Inspection and Abatement has reported that no smoke abatement control measures are enforced in Lake County, Indiana, or in Cook County outside Chicago. The Chicago-Cook County Health Survey of sanitation services in eighty-nine municipalities outside Chicago (see Chapter 10) confirms the report about Cook County outside Chicago. Recent efforts by East Chicago and Hammond, Ind., to establish a smoke-abatement program should be encouraged.

Smoke in the atmosphere presents an added hazard to air transportation in this area, a condition of considerable importance at this time, when Chicago is ambitious to become the largest air terminal in the country.

The estimated cost of damage due to smoke in Chicago is 35 million dollars per year, or about \$10 per capita. In 1911 the estimate was 17 million dollars, with a per-capita cost of \$8. A casual glance at these figures might lead to the conclusion that no advance had been made in smoke abatement. If, however, we consider the value of the dollar of 1911 as compared with 1945, the \$8.00 of 1911 would become \$16.00, an indication that some advancement in smoke control has been accomplished.

RECOMMENDATIONS

It is recommended that:

1. The smoke abatement department staff of observers shall be

increased to permit observations to be carried on throughout the daylight hours on every day in the year.

2. The Board of Commissioners of Cook County, through the Cook County Department of Public Health or through some other suitable county unit, shall conduct a survey with a view to the establishment of ordinances, rules, and regulations for smoke abatement and air-pollution control in the county and shall make provisions for the enforcement of these regulations.

3. The industrial communities in the State of Indiana (Hammond, Whiting, East Chicago, Indiana Harbor, and Gary) shall adopt effective legislation for smoke abatement and air-pollution control and provide for its enforcement.

PUBLIC HEALTH LABORATORY FACILITIES

by *Luther A. Black*

LABORATORIES PLAY an essential part in all health and medical care activities. Without their services effective health work is impossible. The services provided by these laboratories may be classified into two groups: (1) those used in the diagnosis of disease and (2) those employed in sanitation activities.

Health department laboratories generally are equipped and staffed to carry on both types of work; others usually confine their activities to one phase: analysis of the water supply, examination of milk, and similar specialized procedures.

Work of value from the standpoint of public health and medical care is performed not only by tax-supported laboratories but also by those maintained by hospitals, food-processing plants, and commercial establishments. Usually every large metropolitan center is well supplied with laboratories. Although the need for these services is quite as great in smaller places and rural areas, the availability of laboratory services decreases rapidly as population decreases. Any recommendations for a nation-wide program of health and medical care must, therefore, include provisions for adequate laboratory service in all areas.

The American Public Health Association has established and recommended standard methods of examination covering the physical, chemical, and bacteriological phases of water, sewage, milk, ice cream, shellfish, food utensils, and swimming pool water.

The procedures set forth in these standards are under constant study, and changes are made from time to time. These standards are accepted by all agencies engaged in health work, and the efficiency ratings of laboratories are based on these standards.

Likewise, the Association of Official Agricultural Chemists has established standards for the examination of food, and these standards are followed usually in the chemical examination of food. Generally speaking, no such standards exist in the diagnostic field, although

recognized methods of examination are followed in the majority of the laboratories engaged in this type of work. The most conspicuous example is the attempted standardization of serological examinations.

In surveying laboratory activities, each type of work was considered separately to determine compliance with the standard procedures established for that particular type of work. Special inspection forms developed by the U. S. Public Health Service were used in surveying laboratories making bacteriological examinations of water and milk.

SANITARY LABORATORY EXAMINATIONS

Sanitary bacteriological examinations are performed routinely in laboratories maintained by the health departments of Chicago, Evanston, and Oak Park and by the branch laboratories of the state health department located in Chicago. Such examinations are provided for on a part-time basis by the health departments of Berwyn, Winnetka (which also serves Glencoe and Kenilworth), and Chicago Heights, and on a limited scale by the municipalities of Cicero and Maywood through private laboratory services. Bacteriological examinations of water are conducted at the water treatment plants in Chicago, Evanston, Glencoe, Kenilworth, Wilmette, Winnetka, and Hammond and to a limited extent in laboratories maintained by the Sanitary District of Chicago. These laboratories also perform such chemical examinations as are necessary for the proper operation of the treatment plants. Bacteriological and chemical examinations of milk are carried on in laboratories of the largest milk distributors and in private laboratories.

The Cook County Department of Public Health does not maintain a laboratory, but samples submitted by its staff are examined by the Chicago branch laboratories of the state health department.

LABORATORY FACILITIES IN CHICAGO

EXAMINATION OF DRINKING WATER *Chicago Board of Health.*—This laboratory reported 31,046 bacteriological and 5,398 chemical examinations of city water supplies in 1945. The water samples examined included 4,970 samples collected from the distribution system by the water department. All treated water samples were dechlorinated at the time of collection, as required by the *Standard Methods for the Examination of Water and Sewage* and the U. S.

*Public Health Service Drinking Water Standards.*¹ In addition, eighty-three examinations were made of bottled waters. Ice was not examined.

The space, facilities, and equipment used in water-supply analysis by this laboratory are adequate and in good condition. The personnel are qualified and well supervised, the procedures are adequate for the tests used, comply with the "Standard Methods" and are performed satisfactorily. The results are reported satisfactorily and records are adequate. This laboratory is outstanding in that it routinely makes controls to detect any possible error in preparation or sterilization of material, and in reading or reporting results. This laboratory has been particularly interested in high standards of performance, and assistance toward this end has been rendered to it at various times by specialists of the U. S. Public Health Service.

Chicago Water Department laboratory.—The laboratory at the Water Filtration Plant makes routine examinations of water samples, primarily from the standpoint of controlling plant operations. The work includes bacteriological examination of samples of the raw water and of water at various stages of treatment. However, in the new filter plant laboratory, provision is being made for two bacteriological laboratories, one of which will be available for the examination of samples collected from the distribution system.

Adequate laboratory space, facilities, and equipment have been provided in the building now undergoing completion. Observation of the procedures in use indicates that they are adequate for the tests used, comply with the "Standard Methods," and are performed satisfactorily. The results are reported satisfactorily and records are adequate.

Federal laboratories.—The meat inspection laboratory maintained by the United States Department of Agriculture made 300 examinations of water supplies used in the stockyards in 1945. It was reported that these examinations were made according to "Standard Methods" and evaluated in accordance with provisions of the U. S. *Public Health Service Drinking Water Standards.*

EXAMINATION OF SEWAGE *Laboratories of Sanitary District of Chicago.*—The Sanitary District of Chicago has laboratories at each of the sewage treatment plants. Samples of sewage in its varying de-

¹ A summary showing the sources of samples, whether at cribs, pumping stations and land tunnels, distribution system, lake front survey, or miscellaneous, is given in Table 13 of the *Annual Report* of the Purification Division of the Bureau of Engineering and is referred to in Chapter 1 of this volume.

grees of treatment are examined daily in these laboratories for control of the treatment processes and to furnish data which will indicate percentage or degree of treatment effected. Composite samples of industrial wastes of various types are also examined, as well as river and stream samples from points in the drainage channel. In addition, laboratories are maintained on the Illinois River at Joliet, Marseilles, and Peoria in order to determine constantly the effect of the sewage from the Chicago area upon the river at these points.

The examinations made in the laboratories are generally of a chemical nature but bacteriological examinations of water are made for special purposes from time to time, particularly along Lake Michigan in the Calumet area. Many of the samples are composited from individual samples collected at hourly intervals or less throughout the twenty-four hours. The summary of the laboratory work is as follows:

SAMPLES OF WATER EXAMINED

| <i>Laboratory</i> | <i>Number per Day</i> |
|-------------------------------|-----------------------|
| North Side Treatment Works | 49 |
| Calumet Treatment Works | 32 |
| West Side Treatment Works | 26 |
| Southwest Treatment Works | 142 |
| Industrial waste | 8 |
| Channels and Lockport | 49 |
| Illinois River—3 laboratories | 120 |
| Total | 426 |

Approximately fifteen graduate chemists are employed on this work, plus a considerable number of laboratory assistants, samplers, and engineers. The standard methods of sewage analyses of the American Public Health Association are followed. As a member of the committee on standard methods, the chief chemist of the Sanitary District of Chicago has taken an active part in the development of many of the tests included in the "Standard Methods."

LABORATORY SERVICES FOR SWIMMING POOLS AND BEACHES
Chicago Health Department laboratory.—In 1945 this laboratory made 584 bacteriological examinations of samples from swimming pools and beaches. Of these, 279 were beach samples collected by the water department, and 305 samples were collected from swimming pools (155 from Y.M.C.A. pools, 25 from outdoor pools in the Forest Preserve Districts, 65 from U. S. Naval Installations, 55 from one

hotel and one athletic club, and 5 from other hotels and clubs). Not all pools in Chicago submitted samples for examination.

Chicago Board of Education laboratory.—The board's Bureau of Engineering maintains a chemistry laboratory at the Chicago Teachers' College for the testing of materials. This laboratory also makes bacteriological examinations of samples of water from the swimming pools of all high schools in the city. In 1945 they reported 1,800 coliform determinations. The procedures used follow one of the alternative "Standard Methods" for such determinations, utilizing solid confirmatory media, but samples were not collected in thiosulphate-treated bottles (neutralization of disinfectant) as also required by the "Standard Methods." Consequently, the samples analyzed do not show the true sanitary quality of the water at the time of collection, the examinations have little value, and the results of the examination lead to erroneous conclusions.

Chicago Park District laboratory.—Chemical testing of materials is the primary concern of this laboratory, which is located in Burnham Park. Upon occasion, a sample of swimming pool water may be examined. Before 1939, however, such bacteriological testing of swimming pool water was a routine function. No other agencies are making the type of examinations formerly made by this laboratory.

Private laboratories.—A limited number of private laboratories in this area make bacteriological examinations of swimming pool samples from pools both within and without the city. Since their tests are primarily in connection with the control of individual business enterprises, these laboratories were not included in the survey, although their indirect relation to health protection is recognized.

MILK AND MILK PRODUCTS EXAMINATION *Chicago Health Department.*—In 1945, 7,428 plate counts, 4,827 reduction tests, 2,850 phosphatase tests, and 9,585 chemical and physical tests of milk and milk products were made in the health department laboratories, plus 125,506 reduction tests and 8,004 sediment tests on raw milk at receiving stations.

The space provided for milk examination, the facilities, and the equipment were adequate and in good condition. A detailed survey of the bacteriological examination of milk in this laboratory was made by the U. S. Public Health Service in 1941, and only minor deviations from "Standard Methods" were noted. The present procedures are adequate for the tests routinely used, comply with

"Standard Methods," and are performed satisfactorily. The results also are reported in a satisfactory manner, and the records kept are adequate.

Milk Plant laboratories.—Ten of the larger milk distributors maintain laboratories for milk examination, and in addition two private laboratories are engaged in milk examination work. These laboratories all follow the *Standard Methods of Milk Examination*. The work of these laboratories is primarily from the standpoint of quality control of the individual product, hence such laboratories were not included in the survey, although it should be emphasized that their routine tests have a considerable bearing, both indirectly and directly, on the quality of the milk supplied in this area.

Federal laboratories.—The Federal Milk Marketing Administrator maintains laboratories, but it is understood that no tests related to health protection are performed.

RESTAURANT SANITATION EXAMINATIONS *Chicago Health Department laboratory.*—Although there are approximately 23,000 eating and drinking establishments in Chicago, only 1,461 swab tests were made from eating utensils in 1945. These tests were made in the same laboratory in which milk samples are examined. The procedure follows the technique recommended by the Sub-Committee on Food Utensil Examination of the American Public Health Association.

FOOD AND BEVERAGE EXAMINATIONS *Chicago Health Department laboratory.*—In 1945 this laboratory made chemical examination of 1,711 specimens of food and 6 samples of ice cream and bacteriological examination of 1,426 samples of ice cream, 470 samples of shellfish, 4 samples of beverages, and 744 samples of foods.

Private laboratories.—Food is examined by a limited number of private laboratories in this area. Since their tests are not concerned with official control procedures, they were not included in the survey, although their indirect relation to health protection is recognized.

State Department of Agriculture laboratory.—The Division of Foods and Dairies of the State Department of Agriculture maintains a laboratory in Chicago. In 1945 this laboratory examined 2,148 samples of food, including milk, making 1,299 chemical examinations and 849 bacteriological examinations. In chemical analyses the procedures followed are the official methods recommended by the Association of Official Agricultural Chemists.

Federal laboratories.—From the standpoint of food control, this area is fortunate in that the Federal Government maintains labora-

tories concerned with the control of foods, drugs and cosmetics, insecticides, and fungicides and exercises supervision over meat inspection and the pathology and zoology of food-producing animals. Although these laboratories are primarily concerned with products in interstate shipment or over an area of several states, nevertheless, their activities have a markedly beneficial influence on the sanitary production, processing, and distribution of foods in the Chicago-Cook County area. If these facilities were not available, it would be necessary for the local agencies to do considerably more laboratory work in food control.

1. *The Federal Security Agency, Food and Drug Administration* is charged with the enforcement of the Federal Food, Drug, and Cosmetic Act, and other related acts in the Northern Illinois District in which Cook County is located. Eighteen chemists and twenty-five field investigators are employed. The examinations made are largely chemical and include examinations of both domestic and imported food, vitamins, drugs, cosmetics, caustic poisons, and devices alleged to have beneficial effects upon health. During the year ending June 30, 1946, a total of 3,518 samples were examined, of which 2,662 were food samples.

2. *The Meat Inspection Laboratory of the U. S. Department of Agriculture, Production and Marketing Administration* is responsible for the chemical examination of meat, meat-products, and substances used in their preparation in establishments operating under the Federal Meat Inspection Act in the Great Lakes region. The laboratory also examines water used in these establishments to determine its safety for use in connection with food processes. This laboratory examines yearly 2,000 samples of meat and meat products, 2,000 samples of materials used in curing, flavoring, and preparation of meat products, 300 samples of water, and 700 samples of a miscellaneous nature.

3. *The Pathological Laboratory of the U. S. Department of Agriculture, Bureau of Animal Industry* makes research investigations of pathological conditions encountered in Federal meat inspection, provides the inspection division with diagnostic service, and gives laboratory assistance in problems relating to animal diseases. This laboratory served sixteen middlewest states during the year March, 1945, to March, 1946, and made 400 pathological examinations.

4. *The Zoological Laboratory of the U. S. Department of Agriculture, Bureau of Animal Industry*, is devoted to research in prob-

lems of parasitology, especially those which concern parasites of food animals. About two thirds of the time of the laboratory personnel is devoted to research concerning trichinosis and systicerosis, which are diseases in animals transmissible to man.

5. *The U. S. Department of Agriculture, Production and Marketing Administration Laboratory* is engaged in making analyses of commercial insecticides and fungicides.

INDUSTRIAL HYGIENE EXAMINATIONS *Chicago Health Department*.—The health laboratory does not carry on routine examinations in connection with industrial hygiene activities. During 1945 eighty-three examinations of air samples for the carbon monoxide content were made in connection with automobile gases.

Private laboratories.—A limited number of private laboratories make examinations related to industrial hygiene and sanitation, but since these are not related to official control activities and are relatively unimportant from the standpoint of quantity, they were not included in this survey.

State Department laboratories.—The laboratory work carried on by the state departments of health and labor is described in Chapters 32 and 33.

COOK COUNTY (EXCLUSIVE OF CHICAGO)

DRINKING WATER *Evanston Health Department laboratory*.—This laboratory made 355 plate counts and coliform examinations in 1945, including both water supplies and examinations of water in bathing places. Routinely, ten samples per week were collected from the water distribution system, but these were collected in plain sample bottles and not immediately dechlorinated as required by the "Standard Methods" and the *U. S. Public Health Service Drinking Water Standards*. The media and the procedures conformed to the requirements of "Standard Methods," except that interpretation of the presumptive test for presence of coliform was not as now required by "Standard Methods." It is essential that this practice be corrected.

Evanston Water Department laboratory.—A laboratory at the treatment plant makes bacteriological, chemical, and physical examinations of the water. Plankton examinations of the lake water are also carried on during the summer months. A single bacteriological examination is made each day of lake water, filtered water, water as it finally leaves the plant, and water from the distribution system.

The "Standard Methods" of water examination are followed. The requirements of the "Drinking Water Standards" as to number of portions per sample examined and the amount per portion are followed. The number of samples from the distribution system per day examined does not meet the requirements of the *U. S. Public Health Service Drinking Water Standards*.

The examination of the raw water is not carried on in such manner as to present a true picture of the coliform organism content of this water. This should be corrected. Chlorine residual tests on the plant effluent are made at four-hour intervals and daily at different places in the distribution system.

Oak Park Health Department laboratory.—This laboratory reported 613 plate counts and 631 coliform tests in 1945, including samples from both water supplies and swimming pools. As noted on page 373, this laboratory went to extra effort to confirm positive presumptive tests but failed to follow the requirements of "Standard Methods" in effect since 1936, that any amount of gas in the presumptive test is positive.

Berwyn Health Department laboratory.—Few water samples (only twelve in 1945) are examined in this laboratory. Such samples are sent usually to the state laboratory.

Cicero and Maywood health departments.—The municipalities of Cicero and Maywood had a few tests performed in a private laboratory. This laboratory used standard presumptive media and the recommended confirmatory media. The space and facilities were adequate and in good condition. The equipment was adequate, except for a "colony counter." There was no observation of the procedures used.

Water Works laboratories.—The Glencoe, Evanston, Kenilworth, Wilmette, and Winnetka water departments, all taking water from Lake Michigan, maintain laboratories at the water treatment plants. These laboratories are adequately supplied for the work performed. Standard methods of water examination are followed. Routine chemical and physical examinations necessary for the operation of the plants are conducted.

Water sampling schedules for bacteriological examinations to determine the coliform organism content of the water varies in the different laboratories. At Glencoe samples of raw and finished water are examined once daily while one sample from the distribution system is examined weekly. No examinations are made of the water

during the steps in operation. At Kenilworth samples of raw water were examined intermittently before August, 1946. At present, samples of raw filtered water are examined once daily, together with a single sample from the distribution mains.

At Wilmette samples of raw, settled, and filtered water are examined intermittently, samples of finished water once daily, and a sample from the distribution system three times per week.

At Winnetka, samples of raw, filtered, and finished water are examined once daily, together with a sample from the distribution system.

At least one sample per day of raw lake water should be examined for its coliform organism content, and the number of samples from the distribution system examined each day should be that required by the "Drinking Water Standards."

Hammond Water Department.—The Hammond, Indiana, water system supplying local areas in southern Cook County is divided into six districts in Hammond. Distribution system samples from each of these districts are collected and bacteriological examination is made in the water plant laboratory, in addition to the examination of raw, filtered, and finished water. Weekly samples are submitted to the Indiana State Board of Health, and as a method of indicating the potability of the water supplied at the state line, the Indiana State Board of Health sends a copy of the results of the laboratory examination to the Illinois Department of Public Health.

Private laboratories.—A limited number of private laboratories in this area engage in water analysis. The tests made are principally in connection with the processing or control of an individual business; accordingly they were not included in the survey, although their indirect relating to health protection is recognized.

State laboratories.—The Chicago branch laboratories of the Illinois Department of Public Health examine samples from the distribution systems of all public water supplies in the county, thus adequately substituting for a county health department laboratory. In 1945 these laboratories made 2,052 plate counts and 2,052 coliform tests on water, the first year that these tests have been made by the laboratories. A detailed observation was made of the bacteriological examination of water in these laboratories in connection with this survey. Space and facilities are adequate and in satisfactory condition. The procedures for coliform tests were in complete compliance with "Standard Methods" and the *U. S. Public Health Service Drink-*

ing Water Standards. Only a few deviations in minor items of equipment were noted.

Present personnel are qualified and well supervised, procedures are adequate for the tests used, comply with "Standard Methods," and are satisfactorily performed. The results are reported in a satisfactory manner, and the records are adequate.

LABORATORY EXAMINATION OF SEWAGE Small laboratories located at the sewage treatment plants in Arlington Heights, Barrington, Chicago Heights (Bloom Township Sanitary District), Hazelcrest, Lansing, Oak Lawn, and Steger make the physical and chemical tests necessary for efficient plant operation. With the exception of the Bloom Township Sanitary District, where a graduate chemist is employed part time, the few tests required are made by the plant operator.

LABORATORY EXAMINATIONS FOR SWIMMING POOLS AND BATHING BEACHES *Evanston Health Department.*—As indicated on page 370, this laboratory makes plate counts and coliform tests of water from swimming pools and bathing beaches. Beach waters are sampled during the summer season. It was reported that positive coliform tests are obtained regularly.

Oak Park Health Department laboratory.—Plate counts, coliform tests, and residual chlorine determinations are performed on swimming pool samples as well as on drinking water. Positive presumptive coliform tests in lactose broth are confirmed in brilliant green bile broth, but in addition a violet red bile agar plate is made. Confirmation in brilliant green bile is not made, however, if less than 10 percent gas is obtained in the presumptive test, but a plate on violet red bile agar is prepared and reported as positive if colonies appear thereon. Adherence to the requirements of "Standard Methods" since 1936 that any amount of gas in the presumptive test is a positive test should allow confirmation of this by the standard brilliant bile broth, without the extra practice in effect locally of using an additional agar medium.

State Health Department laboratories.—Although control over artificial swimming pools is a function of the state health department, there has been little, if any, activity of this type in its laboratories during the past year. The branch laboratories of the Illinois Department of Public Health located in Chicago examined only thirty-one samples of swimming pool water in 1945 (six for a Chicago hotel and the remaining twenty-five for pools within Cook County). The

state laboratory at Springfield examined an additional forty-four samples from Cook County pools. Since most communities in Cook County are without municipal laboratories, one or the other of these laboratories would have been utilized for official examination of swimming pool waters. The trifling amount of work done in these laboratories is therefore an apparent indication that few such bacteriological examinations are made of water from swimming pools, except for tests which may be performed by commercial laboratories.

EXAMINATIONS OF MILK AND MILK PRODUCTS *Evanston Health Department laboratory.*—This laboratory made 1,566 bacteriological examinations of pasteurized and raw milk by the plate-count method. It was ascertained that they planned to discontinue use of the plate-count method on raw milk supplies and change to a direct microscopic examination. It should be noted that no phosphatase tests whatever were made. Making such a test routinely to detect underheated or improperly pasteurized milk is considered essential. Furthermore, no routine coliform tests are made on pasteurized milk.

The space and facilities are adequate and in good condition. The equipment is modern, adequate, and in good order. The procedures in milk analysis were considered adequate for the tests routinely performed, complied with "Standard Methods," and were satisfactorily performed.

Oak Park Health Department.—This laboratory is crowded into one small room, very inadequate and cramped, and the need for more space, benches, and cabinets is obvious. Otherwise, the facilities are adequate and in good condition, and the equipment modern, adequate, and in good order.

Plate counts of bacteria (784), microscopic examinations (745), phosphatase tests (605), and coliform tests (744) were made on the local milk supply in 1945. The procedures are adequate, complied with "Standard Methods," and are satisfactorily performed. The results are reported satisfactorily, and records were adequate.

Berwyn Health Department laboratory.—This laboratory is housed in one medium-size room in the health department building and operates on a part-time basis for three hours daily. The space and facilities are adequate, and the quarters in satisfactory condition for the work being done. However, some of the equipment is not modern. It is essential that the incubator be modernized or replaced and that a colony counter be provided. Standard dehydrated media are used and the procedures purportedly comply with "Standard

Methods." No copy of standards was available. This laboratory reported 350 plate counts in 1945. However, no phosphatase tests were made to detect improper pasteurization of milk.

Winnetka Health Department laboratory.—This laboratory makes plate counts (625 in 1945), microscopic examinations (3,659), phosphatase tests (625), and coliform tests on pasteurized milk for Winnetka, Glencoe, and Kenilworth. The laboratory is housed in quarters in the Winnetka Water Filtration Plant. The procedures used in milk examination by this laboratory were surveyed by the U. S. Public Health Service in 1941 and found to be outstanding in adherence to "Standard Methods" and correct performance.

Chicago Heights Health Department laboratory.—The Department of Public Health and Safety rents some laboratory space at the Sewage Treatment Plant, Bloom Township Sanitary District, and employs a chemist approximately one evening per week to make plate counts (108 in 1945), butterfat, and sediment tests of the local milk supply. It should be noted that no phosphatase tests as a control on proper pasteurization and no coliform tests to indicate recontamination from equipment are made.

Other local laboratories.—The municipalities of Cicero and Maywood have a limited amount of work performed in a private laboratory. This laboratory makes plate counts, direct microscopic examinations, and phosphatase tests. No coliform tests are made on pasteurized milk. The space and facilities are adequate and in good condition. The equipment is adequate except for a colony counter. The procedures used were not observed.

State Health Department laboratories.—The branch laboratories of the state health department located in Chicago began to examine samples in this area in the fall of 1944, thus adequately substituting for a county health department laboratory. In 1945 the branch laboratories made 439 plate counts and 564 phosphatase tests. A detailed survey was made of these laboratories by the U. S. Public Health Service in 1944. The space and facilities are adequate and in satisfactory condition. The procedures were found in general compliance with "Standard Methods," and the few deviations noted have been corrected, with the exception of two items of equipment.

Present personnel are qualified and well supervised, procedures are adequate for the tests used, comply with "Standard Methods," and are satisfactorily performed. The results are reported in a satisfactory manner, and the records are adequate.

RESTAURANTS SANITATION EXAMINATIONS *Evanston Health Department laboratory.*—The Evanston Health Department makes weekly tests of eating utensils. In 1945, 898 such examinations were made. The technique used, however, was not the swab count technique, revised and proposed for adoption as a standard method by the Subcommittee on Food Utensil Examination of the American Public Health Association in October, 1943, but a procedure proposed in 1936, employing a rinse technique. This procedure should be replaced by the swab count technique.

Winnetka Health Department laboratory.—This laboratory made 252 swab counts from eating utensils in 1945 for the municipalities of Glencoe, Kenilworth, and Winnetka. The procedure followed the technique currently recommended by the American Public Health Association, except that an average of five utensils were examined instead of four.

Service in other communities.—None of the other communities in Cook County, in which there are an estimated 2,500 eating establishments, had bacteriological examinations made of utensils, with the exception of Berwyn, which reported that an occasional sample was run. However, this laboratory did not use a recognized procedure, but plated 1/100 dilution of the material, as in making a bacteriological examination of milk.

Private laboratories.—Few private laboratories in this area make examinations concerned with restaurant sanitation. Their tests would be principally in connection with the control of an individual business, and therefore they were not included in the survey, although their activities may have an indirect relation to health protection.

State Health Department laboratories.—It should be emphasized that no laboratory examinations as a guide to satisfactory cleansing and sterilization of eating establishments are made by the state health department laboratory. State control of all eating and drinking establishments is vested in the State Department of Agriculture, which has its own laboratories in Cook County.

Federal laboratories.—Federal agencies are not responsible for any laboratory examination of eating utensils in the Chicago-Cook County area. Such examinations have been made by a mobile laboratory of the U. S. Public Health Service in connection with supervision of dining car sanitation, in its relation to interstate carriers.

FOOD AND BEVERAGE EXAMINATIONS None of the health departments in Cook County exclusive of Chicago examine food, with

the exception of Evanston, which examined ten samples for foreign substances in 1945.

The State Health Department laboratories.—The Chicago branch of the state health department laboratories examined only a few samples of food in 1945, all in connection with possible food poisoning, because state control of eating and drinking establishments is vested in the State Department of Agriculture.

INDUSTRIAL HYGIENE None of the local health department laboratories in Cook County examine samples related to industrial hygiene and sanitation as a routine procedure. The laboratory at Oak Park did, however, make three analyses of toxic vapors, gases, or dusts in 1945.

MEDICAL LABORATORY SERVICE IN CHICAGO AND COOK COUNTY

Laboratory tests and procedures relating directly to the person or patient will be discussed and analyzed in this section. The Chicago-Cook County area contains a great variety of medical laboratories. Their size varies from the small laboratories operated by individual physicians for the benefit of their own patients, to laboratories in the large hospitals and universities in the area, and the city and state health department laboratories. The scope of their work varies similarly.

The data presented in the following pages are taken from survey questionnaires and from the files of the Co-ordinating Laboratory of the Illinois Department of Public Health. This Co-ordinating Laboratory, a section of the State Division of Laboratories, has headquarters in Chicago and is charged with the operation of a system of laboratory approval throughout Illinois. It has descriptions and records of practically every laboratory in the state engaged in medical work. Table 68 indicates the distribution by type and location of the 168 laboratories in the Chicago-Cook County area which were active during 1945.

TABLE 68. LABORATORIES IN CHICAGO AND COOK COUNTY

| TYPE | NUMBER | | |
|---------------------------|--------------|----------------|--------------------|
| | <i>Total</i> | <i>Chicago</i> | <i>Cook County</i> |
| Hospital | 74 | 61 | 13 |
| Private and commercial | 89 | 75 | 14 |
| Governmental ^a | 5 | 2 | 3 |
| All types | 168 | 140 | 28 |

^a Health department laboratories of Illinois, Chicago, Berwyn, Evanston, and Oak Park.

LABORATORY SERVICES IN CHICAGO *Hospital laboratories.*—Of the 76 hospitals in Chicago, 61 engage in some type of laboratory work. The 15 not doing such work have other arrangements; whatever laboratory tests are needed are done by associated institutions, private laboratories, or city and state laboratories. Most of these fifteen hospitals are so small or so specialized in the services they provide that it is believed that maintenance of a laboratory is not justified. Four mental hospitals and 3 of the 5 maternity hospitals are without adequate diagnostic laboratories of their own. Provision is made only for simple urine and blood tests.

During 1945 the hospital laboratories in Chicago did an estimated total of 3,070,000 tests of all kinds. The percentage distribution of these tests is shown below by certain main categories.

| <i>Kinds of Tests</i> | <i>Percentage</i> 100.0 |
|-----------------------------------|----------------------------|
| Blood counts | 28.0 |
| Urinalyses | 21.0 |
| Biochemical | 13.0 |
| Serodiagnostic | 13.0 |
| Bacteriological | 13.0 |
| Tissue reports | 4.6 |
| Electrocardiograms | 2.1 |
| Basal metabolic rates | 1.4 |
| Parasitological | 1.2 |
| Coagulation time | 1.1 |
| Sedimentation rates | 1.0 |
| Gastric analyses | 0.3 |
| Miscellaneous complement fixation | 0.2 |
| Electroencephalograms | 0.1 |

A considerable portion of the total number of tests performed by hospital laboratories results from the practice of doing one or more tests routinely on each patient admitted. The following tabulation indicates the percentage of hospitals routinely making each of the tests specified on all inpatients:

| | |
|---------------------------|----|
| Urinalyses | 86 |
| Red blood counts | 77 |
| White blood counts | 81 |
| Differential blood counts | 75 |
| Hemoglobin estimations | 79 |
| Serodiagnostic tests | 62 |

Available data indicate that of the twenty-four hospitals in Chicago reported to operate outpatient departments, about half routinely make at least blood and urine tests on outpatients.

Qualitatively, the work of the hospital laboratories may be judged in two ways: first, by the quality of their supervision; and, second, by their record in securing and retaining state approval for certain tests of public health significance. According to information given in the questionnaires returned, 88 percent of the hospital laboratories are under the direction of physicians, 67 percent of whom devote full time to this work.

Pathologists accredited by the National Board of Pathology supervise the laboratories of 64 percent of the hospitals. Some of these National Board diplomates, however, give part-time attention to two or more hospitals.

All of the sixty-one hospitals in Chicago operating laboratories have earned the approval of the Illinois Department of Public Health for one or more specific tests. The state approval plan is on a voluntary agreement basis, except that laboratories performing tests in connection with prenatal and premarital examinations must be approved.

The co-operating laboratories periodically test and report on unknown specimens. Approval is granted separately for specific laboratory procedures in the performance of which a laboratory has demonstrated its accuracy. Certificates of approval are issued annually, and the quality of work must be kept at a high level in order to retain state approval.

Standard Kahn antigen and positive syphilis-control serum are furnished to all co-operating laboratories without charge. Laboratories interested in the typing of pneumococci are kept supplied with anti-pneumococcus typing sera. All registered laboratories are given a manual of approved methods for use in making infectious disease tests.

GOVERNMENTAL LABORATORIES The two large public health laboratories in Chicago, those of the Chicago Department of Health and the Illinois Department of Public Health, performed a total of 1,119,295 tests for Chicago residents during 1945. The state laboratory does diagnostic and control work for the northern third of Illinois, but, only that portion of its work originating in Chicago is included in this analysis. The work done by the state laboratories for Cook County exclusive of Chicago will be considered later.

In addition to its central laboratory, the Chicago Health Depart-

ment in 1945 operated five branches which served: (1) The Social Hygiene Clinic, (2) Intensive Treatment Center, (3) Contagious Disease Hospital, (4) Police Headquarters, and (5) Near West Side Venereal Disease Clinic. All these branches, with the exception of the Contagious Disease Hospital laboratory, are concerned primarily with venereal disease tests.

The work of the state health department and city health department laboratories is principally in connection with infectious diseases, and syphilis figures prominently in the total. The main types of tests are as follows:

| <i>Kinds of Tests</i> | <i>Percentage</i> |
|--|-------------------|
| Serological (principally for syphilis) | 60 |
| Bacteriological | 23 |
| Sanitary & miscellaneous | 17 |

The quality of work done in the laboratories of the state and the city health departments in Chicago is excellent.

Because there is no civil service eligibility list, many of the personnel in the city health department are employed on a temporary basis. In the professional group 16 have civil service appointments and 16 temporary appointments. The majority of the temporary group were appointed originally through civil service to a grade lower than that they now hold on a temporary basis. Half of the professional group have been employed for more than thirteen years, and the average length of employment is 16 years. In the case of the laboratory assistants, however, only 2 of the 43 employees hold civil service appointments. The majority of those holding temporary appointments have service of less than six years. No civil service eligibility list has been set up during this period.

All key positions in these laboratories are filled by employees who are well qualified by training and experience.

The interlaboratory checking system, operated by a separate organization within the state health department, shows that these laboratories are maintaining a high standard of accuracy in infectious disease work.

OTHER LABORATORIES IN CHICAGO Active commercial and private laboratories in Chicago numbered seventy-five during 1945. The volume of work done by these laboratories in that year is estimated to have been 3,550,000 tests. Distribution of these tests by certain main categories is as follows:

| <i>Kinds of Tests</i> | <i>Percentage</i> |
|-----------------------|-------------------|
| Serological | 48.5 |
| Bacteriological | 19.3 |
| Urinalyses | 11.6 |
| Hematological | 10.0 |
| Miscellaneous | 10.6 |

It is difficult to generalize about the quality of work in the private and commercial laboratories. The records of the State Co-ordinating Laboratory on check specimens sent to private and commercial laboratories show a range of competence from excellent to poor. Since laboratories must be approved by the state health department in order to do serologic tests for syphilis in connection with prenatal and premarital examination laws, a commercial laboratory has to raise its quality of performance to approvable level or lose this business. The private laboratories operated by a single physician or a group are subject to the same laws, but in many cases such organizations prefer to send specimens of this type to commercial or governmental approved laboratories rather than to meet requirements for approval.

COOK COUNTY (EXCLUSIVE OF CHICAGO)

HOSPITAL LABORATORIES Of the nineteen hospitals in Cook County outside Chicago, thirteen operate their own laboratories; all are approved by the Illinois Department of Public Health for one or more specific tests. Three mental hospitals, one maternity hospital, one small community hospital and one infirmary for aged persons constitute the group which do not operate laboratories.

Estimates based on partial returns of the data obtained in the hospital section of the Chicago-Cook County Health Survey indicate that the thirteen laboratories did a total of 530,000 tests during 1945. The various kinds of tests made in these laboratories are essentially the same as those listed in the tabulation of tests made by the Chicago hospital laboratories.

GOVERNMENTAL LABORATORIES The three municipal laboratories operated by the health departments of Berwyn, Evanston, and Oak Park are approved at least for syphilis serology and the diagnosis of gonorrhea by smears, so that their reports are acceptable under the law for prenatal and premarital laboratory examinations. According to survey questionnaire returns, these laboratories did a total of 36,320 tests during 1945.

To this total must be added the 56,705 tests made by the state laboratory located in Chicago for residents of Cook County outside Chicago. An analysis of this work by types of tests, together with the percentage distribution, is presented in Table 69.

TABLE 69. TESTS MADE IN COOK COUNTY GOVERNMENTAL LABORATORIES

| <i>Type of Test</i> | <i>Total</i> | <i>Percentage of Total</i> | <i>Berwyn</i> | <i>Evanston</i> | <i>Oak Park</i> | <i>State Laboratory</i> |
|---------------------|--------------|--------------------------------|---------------|-----------------|-----------------|-----------------------------|
| Serological | 52,341 | 56.3 | 162 | 7,661 | 4,226 | 40,292 |
| Bacteriological | 21,471 | 23.1 | 134 | 9,972 | 1,174 | 10,191 |
| Sanitary | 16,395 | 17.6 | 725 | 3,864 | 6,699 | 5,107 |
| Hematology | 1,031 | 1.1 | 170 | 591 | 15 | 255 |
| Urinalyses | 670 | 0.7 | 156 | 490 | 24 | ... |
| Miscellaneous | 1,117 | 1.2 | 3 | 158 | 96 | 860 |
| Total | 93,025 | 100.0 | 1,350 | 22,736 | 12,234 | 56,705 |

The three municipal organizations are small, so that the laboratories can be supervised readily by the health officers. Results on check specimens tested for the State Co-ordinating Laboratory indicate an excellent quality of infectious disease work.

PRIVATE AND COMMERCIAL LABORATORIES Fourteen private and commercial laboratories active in 1945 in Cook County outside Chicago did an estimated 143,000 tests in that year. Distribution of these laboratories in the county follows the density of population. The essentially rural townships of the northwestern portion of Cook County have no diagnostic laboratories of any type; service is available, however, in near-by Kane and Du Page counties to the west and the south. The same situation exists in the southwestern parts of Cook County, with services available in near-by Will County.

Tests made by private and commercial laboratories are of the same general types as those performed in similar laboratories in Chicago.

CHICAGO AND COOK COUNTY SUMMARY

Medical laboratory work in Chicago and Cook County during 1945 amounted to an estimated total of 8,505,320 tests of all types. Table 70 shows the distribution.

The usual types of laboratory examinations are widely available on a fee basis, in every neighborhood in Chicago and in the suburban towns. The Chicago Health Department laboratory under certain circumstances extends its services at a nominal fee to persons and organizations located outside Chicago. Laboratory service of the clinical or medical kind is tied up so intimately with the practice of

TABLE 70. TOTAL LABORATORY TESTS, CHICAGO AND COOK COUNTY

| <i>Place</i> | <i>Total</i> | <i>Hospital</i> | <i>Governmental</i> | <i>Private and Commercial</i> |
|--------------|--------------|-----------------|---------------------|-------------------------------|
| Chicago | 7,796,000 | 3,070,000 | 1,119,295 | 3,550,000 |
| Cook County | 709,320 | 530,000 | 93,025 | 143,000 |
| Total | 8,505,320 | 3,600,000 | 1,212,320 | 3,693,000 |

medicine that any deficiency in volume of work must be chargeable to failure of physicians to utilize the available facilities fully.

Illinois has set no legal requirements for the qualifications of laboratory workers. If certain minima of training and experience were required, some improvement in the quality of work done might result. The licensure of laboratories by the city of Chicago has little to do with qualifications of the laboratory personnel; it is designed primarily to eliminate undesirable and hazardous physical conditions in the laboratories and to yield revenue to the city.

Aside from improvement in the teaching of laboratory techniques in the schools, the efforts of professional societies, and intra-laboratory checks and controls, the only general effort designed to improve the accuracy of medical laboratory work in the survey area (and in Illinois generally) is the approval program of the Co-ordinating Laboratory of the Illinois Department of Public Health.

COMMENTS AND DISCUSSION—CHICAGO AND COOK COUNTY

STATE APPROVAL OF LABORATORIES One of the factors most effective in obtaining reliable diagnostic laboratory results in this area has been the system of laboratory inspection and approval maintained by the Illinois Department of Public Health. Laboratories performing tests in connection with prenatal and premarital examinations must be approved, in accordance with premarital and prenatal laws. State laboratory inspection and approval is on a voluntary basis for certain other diagnostic procedures. In addition to health department laboratories, seventy-five clinical and nonhospital laboratories and sixty-two hospital laboratories are approved for specific diagnostic tests in Chicago. In Cook County 14 clinical and 11 hospital laboratories are currently approved for such tests. Similar approval of laboratories performing sanitary tests is also needed. In a few states all laboratories performing tests related to health are inspected and performance of tests must meet approval before licensing.

In accordance with one of the provisions in the present Illinois Grade A Pasteurized Milk Law, beginning July 1, 1946, the state

health department is authorized to approve laboratories making bacteriological examinations of such milk, and it is understood that such advisory services will be instituted in the immediate future. This requirement should go far toward unifying the procedures used and the results obtained in milk analysis, and an extension of this service to other fields of sanitary laboratory practices is desirable.

LABORATORY FACILITIES AVAILABLE The surveys show that the necessary laboratory facilities are available in both the city and the county, the latter through the branch laboratories of the Illinois Department of Public Health located in Chicago. However, many small communities in the county apparently do not realize that such laboratory services are available. In some instances a few have employed a private laboratory to run a limited number of tests which could have been obtained free through the county health department, from the branch laboratories in Chicago. It is understood that even recently one of these communities, was considering the establishment of a part-time laboratory. It should be possible to have full-time laboratory services available to communities desiring this service through co-operation in such a plan as that adopted by the North Shore municipalities.

Possibly one factor responsible for the failure of Cook County communities to utilize the services available is the fact that the Cook County Department of Public Health has been authorized to extend its activities under the revised state law only since January 1, 1946. By assuming leadership, the Cook County Department of Public Health can encourage and promote greater use of present facilities, especially of the state laboratory. It could also aid in standardization and modernization of some methods and equipment now used, with a consequent increase of the accuracy of the results reported and possibly even a reduction in the work involved. Introduction of other appropriate tests would then be possible, such as (1) coliform tests on pasteurized milk as an index of postpasteurization contamination, (2) swab counts on eating utensils as an index of their cleanliness and sterilization, (3) general use of thiosulphate in sample bottles to dechlorinate, at the time of collection, swimming pool and treated water samples.

PROVISION FOR LABORATORY RESEARCH Research in the interest of improving sanitary laboratory examinations and as an incentive in the promotion and maintenance of a high level of interest among

the scientific personnel is desirable in a well-rounded laboratory service. Research is conducted frequently in state health departments. In Illinois it is carried on by other sections of the Division of Laboratories of the Illinois Department of Public Health. The section of the branch laboratories in Chicago concerned with sanitary laboratory practices, although of rather recent origin, has conducted some research and improvement of sanitary laboratory procedures, and investigations into factors concerned should continue to be one of its primary functions.

Most city health departments are not large enough to have specialized laboratory personnel sufficiently trained and with a large enough portion of their time available to undertake investigational work. However, in a city the size of Chicago, the need* for this activity should be emphasized to administrative officials, and provision should be made to encourage and continue such activities. It should be self-evident that the adoption of such a policy would result in improvement of laboratory practices, and in maintaining a high level of interest among the laboratory personnel concerned.

ADEQUATE AND DEPENDABLE SERVICES The need of laboratory services for small, as well as large, communities is generally recognized. Such services should be adequate and dependable. Factors important in this connection are (1) adequate facilities, (2) qualified, well-trained personnel, (3) proper procedures and records, and (4) adequate control.

In general, the quarters and facilities of the official laboratories in this area were adequate, except in isolated instances, which have been detailed in the report. The amount of space necessary depends upon the character of tests and their volume. Where bacteriological work is to be done on any considerable scale, a separate preparation room should be provided, with adequate utilities, modern sterilizers, and ample sink and table space. This room should be well ventilated and lighted. All laboratories should have modern and efficient equipment for the tests to be made, and funds should be made available for the purchase of necessary equipment.

Even an experienced laboratory worker cannot be qualified thoroughly in all phases of laboratory work; hence when a specific kind of laboratory work must be performed, it is desirable to have specialists in the various fields to whom workers can refer for advice. From this standpoint, as an aid to effective laboratory work, the state health department has an interest in providing consultant laboratory

service, not only for its own branch laboratories but also for the personnel of local laboratories.

Such consultation service will be helpful in promoting correct analyses and reports. In view of the multiplicity of laboratory tests and modifications that have been proposed, the need for adherence to "Standard Methods" and other recognized practical procedures is stressed.

Another essential in obtaining satisfactory laboratory results is adequate control. This control may be obtained in certain types of work by sending out and reporting back upon check specimens, in the approval system for diagnostic tests now in use by the state health department. Such check specimens are not practical for most of the tests used in the sanitary laboratory. Here more reliance must be placed upon visits by specialists to ascertain whether the apparatus, preparation of materials and procedures of analysis, recording, and interpreting results is satisfactory.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. In addition to the present laboratory for treatment plant control, a laboratory shall be established by the water department for examination of samples from the distribution system to check on the efficiency of chlorination and for necessary studies incident to water treatment processes.

2. The Chicago Health Department shall continue the examination of water samples from the distribution system independently of the water department and in general from different points. The combined number of samples collected daily should be that required by the *U. S. Public Health Service Drinking Water Standards*.

3. The routine examination of water from swimming pools and bathing places shall continue to be a regular procedure in the city health department laboratory, except where such examinations are made by other official agencies. However, greater regularity in collection of samples by the responsible agencies should be encouraged.

4. Where other official agencies make routine examinations of swimming pool waters, reports of such examinations shall be made promptly to the health department.

5. The board of education shall comply with the standard procedures in the collection and examination of swimming pool waters under its jurisdiction.

6. The city health department laboratory shall institute as a regular procedure the laboratory tests necessary to determine the sanitary condition of eating utensils.

7. The city of Chicago shall amend the ordinance relative to licensing laboratories to embody requirements equivalent to, or in excess of, any similar act of the state legislature.

8. All maternity and mental hospitals, as well as general hospitals shall have adequate diagnostic laboratories.

COOK COUNTY (EXCLUSIVE OF CHICAGO)

1. Local health department laboratories shall improve their techniques and procedures in the bacteriological examination of water and follow more closely the standard methods of examination.

2. Local health department laboratories shall establish as a routine procedure the examination of water samples collected from the distribution system of the public water supply.

3. The water works laboratories shall increase the number of samples collected from the distribution system so that the total number of samples examined by the local health departments, the water department, and the state health department will meet the requirements set forth in the *U. S. Public Health Service Drinking Water Standards*.

4. Arrangements shall be made for an increase in the number of examinations of samples of water from public water supply systems in communities not supplied with laboratory facilities.

5. Local health department laboratories shall make routine examinations of water from swimming pools and bathing places within their respective jurisdictions and that the standard methods of examination shall be followed.

6. The state health department shall encourage the use of its laboratory service for examination of swimming pool water by those communities where local laboratory service is not available.

7. Local health department laboratories carrying on milk examinations shall include routine phosphatase tests and examinations for presence of coliform organisms in pasteurized milk. The standard methods of milk examination should be followed.

8. Local health department laboratories shall institute routine examinations of eating utensils in public eating places to determine their sanitary condition.

9. The county health department shall foster and arrange for

greater utilization of the laboratory facilities now available in both the sanitary and the diagnostic fields.

10. The inspection and approval of laboratories by the Illinois Department of Public Health shall be extended to include sanitary laboratories and that regulations shall be adopted by the state health department specifying minimum standards for all laboratory workers in technical grades.

11. All maternity and mental hospitals, as well as general hospitals, shall have adequate diagnostic laboratories.

HOUSING

by *Dwight F. Metzler*

WHILE EXACT RELATIONSHIPS between the quality of housing and the incidence of disease have not been demonstrated so far by scientific procedures, no one will deny that overcrowding, inadequate toilet and washing facilities, faulty plumbing, lack of light and ventilation, insufficient exits, and structural deterioration in blighted or sub-standard housing areas have a deleterious effect upon the health of the occupants. Crowded yards, arterial trafficways, the use of the same area for industrial, commercial, and residential purposes, and other bad environmental conditions are detrimental to mental health as well as to physical well-being.

The circumstances which cause people to live in these insanitary surroundings are certainly of public health significance, and the health officer, as well as the citizen, has a legitimate interest in the causes and their effects on individual and community health.

SCOPE OF THE STUDY

This study is offered as an objective analysis of existing practices and regulations in regard to housing in Chicago and Cook County. The chief emphasis is placed on housing as it relates to the physical and mental health of the residents.

A study of the existing laws has been conducted to determine the number of basic factors required for healthful housing in the Municipal Code of Chicago. In addition, an objective study has been made of the housing inspection services, with conclusions based on field observations and an analysis of the Bureau of Housing Inspection files and records to determine routine practices and procedures.

Final action in regard to violations taken to court has been investigated, and the methods of preparing the cases for suit have been observed. Certain court procedures practiced in Chicago are presented, and their effect on the enforcement agencies is discussed.

In arriving at the conclusions, the existing legislation has been

compared with that of other cities with nationally known housing programs. Model codes, basic principles prepared by the American Public Health Association's Committee on the Hygiene of Housing, and comments of prominent authorities on housing regulation have been drawn from freely. A recent study of building regulations by the John B. Pierce Foundation has covered the codes which relate to the construction and maintenance of buildings in Chicago.¹ Although the field encompassed by this report has not been explored, its conclusions have been accepted as authoritative for the purposes of this housing study.

The enforcement of housing regulation in Chicago has been compared with that of other large cities, and points of dissimilarity have been analyzed. The organization of the enforcement services has been compared with accepted sound administrative practice; in addition it has been discussed with persons whose experience and training make their comments valuable.

HOUSING IN CHICAGO

EARLY ACTIVITIES The industrial development of Chicago, together with the rapid increase in population, was accompanied by problems of housing sanitation. With the mounting density of population, the building of tenements, and the conversion of other buildings for tenement use, the efforts necessary to protect the residents have increased.

When the first board of health was created, June 19, 1835, one of its duties was defined as examining "dwelling houses," causing owners to remove all the "predisposing causes of disease," and abating "all nuisances." Attention to this responsibility appears to have varied during the years, the greater amount of attention having been given during years of epidemics. The cholera outbreaks of 1849, 1850, and 1852 increased efforts toward providing a safe water supply, disposing of waste matter from premises, and observing sanitary conditions within the home. During the epidemics of 1854 and 1855 surveys were made of the premises on a block-by-block basis. Sanitary violations were noted, and orders were issued providing for abatement.

After the re-establishment of the board of health in 1867, an elaborate block-by-block survey was made of the buildings, water supply, drainage, and environmental conditions throughout the city.

¹ In 1943 the Chicago Association of Commerce and Industry employed the John B. Pierce Foundation "to make the necessary technical analysis which resulted in this study" (see the Chicago Association of Commerce and Industry, *Report*, 1946, p. 10).

The great Chicago fire on October 9, 1871, made an estimated one hundred thousand persons homeless and added overcrowding to the problems of the health officials.² They did not believe, however, that congested living was as important in the spread of disease as the previously recognized problems of a safe water supply and means of sewage disposal.

Recognition of the role of the tenement in the spread of disease was responsible for an unsuccessful attempt to have a tenement house ordinance enacted in 1874. Edith Abbott states: "During this period, in fact, evidence was accumulating as to the connection between the spread of disease . . . and lack of drainage facilities, so that lack of sewers rather than overcrowding seemed the source of disaster, although the foci of infection were frequently said to be tenement houses."³

In 1878 there were 4,896 tenements in the city, occupied by 17,768 families. The following year a survey was made of tenement houses by thirty-three physicians, who volunteered for the task. Information from this survey was used by those who obtained the passage of a so-called tenement and workshop inspection act in 1880. This act, in spite of its title, did not provide for the inspection of workers' homes.

At the insistence of the commissioner of health, a tenement house law was enacted by the state legislature in 1881. This law required that building plans be submitted to the health department for approval of facilities for ventilation, light, and plumbing. In addition to this activity, the health department served notices of violations on agents "of unsafe and dilapidated buildings," with the result that the condition of old houses was improved.⁴

Interest in housing increased substantially after the passage of the tenement house law. Health authorities continued to inspect dwellings for insanitary conditions. In 1887 inspections were made of 31,171 structures, and 85 percent were reported to be seriously defective in ventilation, drainage, or plumbing.

A department of buildings was established in 1875 and given the responsibility for granting permits for the erection and removal of buildings. The building ordinances were revised in an act adopted by the city council in 1898. These revised ordinances strengthened

² Alfred Theodore Andreas, *History of Chicago*, Chicago, A. T. Andreas, 1884-86, Vol. II.

³ Edith Abbott, *The Tenements of Chicago, 1908-1935*, Chicago, University of Chicago Press, 1936, pp. 45-48.

⁴ Board of Health of Chicago, *Report, 1881-1882*, p. 50.

the building department's powers to force compliance on new construction and gave it the authority to wreck a building constructed in violation of the code. In short, the department was made the building-inspection agency.

The City Homes Association, formed for the purpose of improving conditions in tenement houses of the city, conducted a study during the summer of 1900. This study, published in 1901 under the title *Tenement Conditions in Chicago*, included the investigation of housing conditions in three areas of Chicago's west side. The investigators found congestion of buildings on the lots, large tenement houses (contrary to public belief), overcrowding, and inadequate light and ventilation. Seventeen percent of the houses were found unfit for habitation, and serious fire hazards were common. The work of this association aided substantially in passage of the tenement house law of 1902.

This law was no sooner enacted than the city council attacked it and adopted amendments exempting builders from its provisions. Edith Abbott states that ⁵ "the great weakness was failure on the part of the authorities to enforce the new ordinance. Although the ordinance required much more rigorous inspection than had been made before, no reorganization of the health department took place, and the following summer Chicago experienced a typhoid epidemic especially virulent in the crowded neighborhoods." As a result, the health department was investigated, its head was censured, and five inspectors were indicted for accepting bribes.

That the law had little effect on existing tenements was shown by the 1905 survey of the areas previously studied by the City Homes Association. However, it is reported to have caused improvement in the construction of new buildings.

In 1907 an able administrator, experienced in housing inspection work, was placed in charge of a sanitary inspection bureau in the health department. Inspection of dwellings was initiated by a board of survey, and by 1910 a substantial number had been repaired or demolished. Reports state that the violations were so handled that it was not necessary to refer a single case to court.⁶ During this period the number of inspectors was increased to a maximum of 55, and the health department actively sponsored improvements of the ordinance.

⁵ Abbott, *The Tenements of Chicago, 1908-1935*, p. 63.

⁶ Chicago Health Department, *Report 1907-1910*.

Following the first World War attention was directed to other matters, and the health department reported that it was "impossible to give any attention to housing conditions—such as were made in former years" because of insufficient personnel.⁷ The number of sanitary inspectors was reduced from 54 in 1916 to 28 in 1922, yet the problems of overcrowding, illegal conversions, rat depredations, and evictions due to uncontrolled rents were increasing.

Various amendments were made to the building code during the years that followed. Among the most important was the revision of the plumbing code in 1930. This revision was based upon the "Hoover Code." The building code was revised in 1931 and again in 1939. Although each of these revisions contributed some improvements in new building regulation, a similar improvement in regulation of existing buildings was not accomplished.

EVOLUTION OF THE BUREAU OF HOUSING INSPECTION The Division of Housing and Sanitation was created in 1912 as a part of the Bureau of Sanitation in the Chicago Health Department. In 1922 the responsibility for housing inspection and the investigation of complaints was transferred to the newly created Section on Community Sanitation; 8 inspectors were added in that year, to make a total of 30 inspectors. About as many were maintained until the force was cut to 18 in 1931. In 1940 this number was reduced to 13.

Civic organizations recognized the inadequacy of this inspection staff, and they exerted considerable influence toward having the number of inspectors increased. As a result, some plumbers to be used as inspectors were borrowed from another department in 1943. Public interest in the effectiveness of housing inspection services continued, and an ordinance prepared by the Metropolitan Housing Council to consolidate housing inspection responsibilities was considered by the Chicago City Council in December, 1943. In March, 1944, the Chicago City Council authorized a new position—that of co-ordinator of permits and inspections. The co-ordinator is responsible directly to the mayor, and his function is to eliminate the duplication of duties and effect increased co-operation between the enforcement bureaus. Several meritorious reforms in inspection procedure have issued from this office.

Public recognition that the investigation of complaints alone was revealing a very small part of the total violations led to increased demands for a routine, canvass type of inspection to cover every resi-

⁷ Chicago Health Department, *Report 1919-1921*, p. 249.

dence in the slum areas. As a result, eight temporary inspectors were hired for this purpose in 1945; the first inspections on a planned basis were made in June of that year.

A study was made during this period of the regulatory inspection services in Chicago by the City of Chicago Budget Survey Committee. The committee pointed out the numerous departments which were responsible for enforcing regulations concerning the maintenance and occupancy of existing buildings and proposed that the community sanitation section be reorganized and assigned full responsibility for this function. It was proposed to form a new Department of Buildings and Housing and to give the housing inspection function "bureau status." This was an important advancement, for it recognized (1) that housing inspection, to function effectively, must be given a higher rank in the administrative scale, and (2) that the assignment of full responsibility for housing inspection to one bureau was essential.

The committee's recommendations were sent to the city council in August, 1945. In January, 1946, the council transferred the community sanitation personnel and activities to the Department of Buildings as the Bureau of Housing Inspection. In addition, it placed in this bureau full responsibility for enforcing all sections of the housing code pertaining to health and safety of existing dwellings, regardless of the concurrent responsibilities of other bureaus or departments.

The duties of the community sanitation section were listed in 1926 as investigation of housing and other environmental sanitation complaints, removal of dead animals, and the inspection of public comfort stations.⁸ These duties were increased until in 1943 they were listed as supervision of fumigation, inspection of industrial establishments for license and violation of the sanitary code, inspection of gas stations, public conveyances, shoe repair shops, beauty parlors, bird stores, junk dealers, florists, trailer camps, and scavengers.⁹ All these functions were the responsibilities of thirteen inspectors in a city of nearly three and one-half million persons,¹⁰ and were transferred to the Department of Buildings by the city council on January 9, 1946.

Obviously, the increased duties of the decreased personnel pre-

⁸ Chicago Health Department, *Report 1926-1930*, p. 444.

⁹ "Community Sanitation Report, 1943" (unpublished).

¹⁰ An additional twelve plumbers had been borrowed for routine inspection duties from the Division of Water Pipe Extension.

vented the health department from carrying out any program of planned inspection. Although the commissioner of health had stated in 1910 that the greatest need was for a housing survey, such a study was not undertaken until June, 1945. Even then it was not truly a survey to be used to guide policy and plan programs. It was only a house-to-house visit of selected areas for the purpose of finding violations of the city code.

HOUSING ORGANIZATIONS AND THEIR ACTIVITIES Several public and civic organizations have as their chief aim the improvement of housing conditions in Chicago. In addition to these, numerous community planning groups and committees have a substantial interest in housing, and their programs influence community housing activities.

The *Metropolitan Housing Council* is a volunteer citizens' organization formed in 1934 to improve housing conditions in Chicago. It is supported by membership dues and contributions. This council prepares programs, conducts education, and helps to bring together the work of both public and private agencies concerned with urban redevelopment, planning, enforcement of housing standards, housing for minority groups, and over-all considerations of housing needs for the metropolitan area. Now engaged in formulating a program for the rehabilitation of blighted areas around which the entire community can unite, the Metropolitan Housing Council is also continuing its efforts for other improvements in the housing field.

The *Chicago Housing Authority* was incorporated in 1937 under the terms of the Illinois Housing Authorities' Act. It plans, constructs, and operates housing projects for families of the low-income groups; and at the time of this report it is also constructing and managing the emergency housing developments constructed for veterans. On September 10, 1946, 7,176 units were of the low-rent type, and 700 were temporary structures for the housing of veterans.

The *Chicago Plan Commission*, which includes 26 members appointed by the mayor and confirmed by the city council, was established by city ordinance in 1939. It is required to prepare a master plan for the city, promote the plan, and prepare plans for specific improvements. It makes studies of substandard housing areas with the view of replanning and redeveloping such areas, but it functions in an advisory capacity only.

The *Illinois State Housing Board* is authorized by statute to advise local officials in developing programs of slum clearance, rede-

velopment, and community planning. It assists local communities in determining housing conditions and needs, and aids in developing housing programs. State grants to assist both private and public housing are allocated through this board.

The *National Housing Agency* is responsible for over-all housing-program planning and co-ordination of labor and materials with the most urgent housing needs. It gives financial assistance through its constituent agencies and conducts housing surveys and investigations.

HEALTH PROBLEMS IN SUBSTANDARD HOUSING AREAS A brief review is here made of the data which are available on housing conditions in Chicago, without any attempt to establish a strict relationship between housing and health. That substandard housing and poor health go hand in hand is an accepted fact. The reader should keep in mind, however, that sociological and economic factors other than housing also contribute to a higher incidence of disease and death in the so-called depressed areas. It is those places in which housing quality is low and the death rates from certain diseases commonly associated with inadequate housing are relatively high that should receive special attention from both housing and public health agencies.

According to a recent estimate made by the Chicago Plan Commission, approximately 100,000 dwelling units are substandard, because they are known to be in need of major repairs, are obsolescent, or are unfit for human habitation.¹¹ The shortage of materials, national preoccupation with the war, lack of rigid enforcement, illegal conversions, and overcrowding have all contributed to increased deterioration.

The Chicago Plan Commission estimates that the total amount of substandard housing in Chicago covers about 22 square miles. Large slum areas adjoin the downtown "Loop" district. This is not the entire picture, however, as other smaller areas are scattered throughout the city. These represent malignant centers from which blight radiates into the neighboring communities where housing conditions at present are satisfactory.

Overcrowding has often been used as an index of housing conditions, as persons who are living under congested circumstances commonly lack many of the facilities and amenities which contribute to good housing. Overcrowding is also important, because of the greater

¹¹ Chicago Plan Commission, *Housing Goals for Chicago*, Chicago, Chicago Plan Commission, 1946, p. 5.

ease with which diseases are transmitted as personal contacts become closer and more continuous. That tuberculosis and the respiratory diseases are more readily transmitted under crowded conditions is accepted as a fact.¹² In making any comparison between degree of crowding and disease incidence it should be recognized that such factors as family income, size of rooms, age and sex, and number of persons in the family influence the results.

While measurement of overcrowding only, in terms of persons per room, is a rough yardstick and is not highly reliable, it is generally agreed that an over-all average of 1.5 persons per room represents serious overcrowding. Data obtained in the 1940 census indicate that 5.6 percent of the dwelling units in Chicago were occupied by an average of more than 1.5 persons per room. Study of the statistics obtained for each of the 75 community areas into which Chicago is divided reveals that in one third of the areas 5 percent of the dwelling units were occupied by more than 1.5 persons per room, and in 2 of these areas overcrowding was such that from 20 to 25 percent of the dwelling units contained more than 1.5 persons per room. On the other hand, this occupancy rate was found in less than 1 percent of the homes in some areas.

A study of the deaths from tuberculosis and respiratory diseases which occurred in each community area from 1940 to 1944, inclusive, showed that rates were highest in the areas where overcrowding was the greatest.

Figures 4 and 5 show the death rates for each community area from tuberculosis and respiratory diseases, respectively. The community areas are arranged from left to right in descending order of overcrowding. It may readily be seen that the areas with the highest death rates are in the upper one third of the percentage of dwellings in which there are more than 1.5 persons per room.

For the five-year period 1940-1944 more than 65 percent of the deaths from tuberculosis in Chicago and more than 54 percent of the deaths from respiratory diseases (exclusive of tuberculosis of the lungs) occurred in twenty-six community areas reported in 1940 to be most overcrowded. Thirty-seven percent of the city's population lived in these areas. This finding bears out the observations and conclusions of the National Health Survey that disability from diseases is relatively more frequent among persons who live in con-

¹² American Public Health Association, Committee on the Hygiene of Housing, *Housing for Health*, Lancaster, Pa., The Science Press Printing Company, 1941.

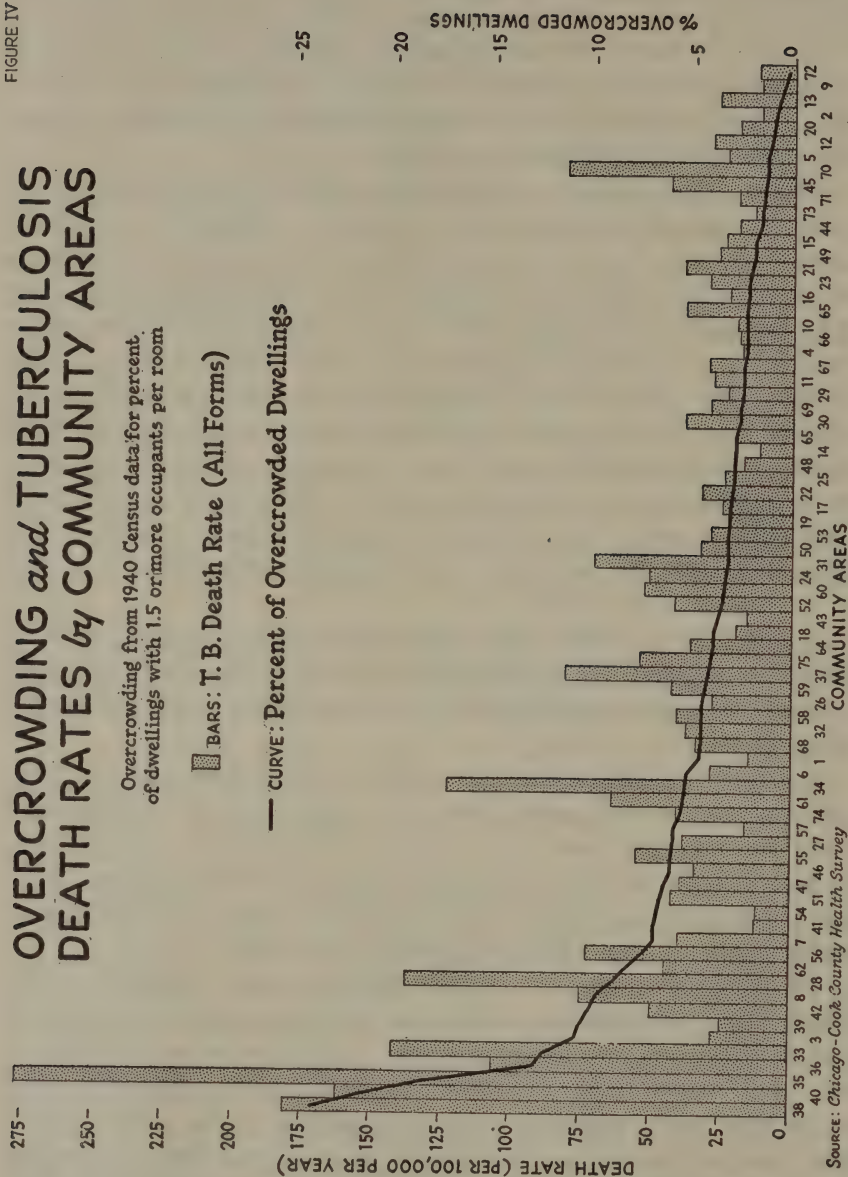
FIGURE IV

OVERCROWDING *and* TUBERCULOSIS DEATH RATES *by* COMMUNITY AREAS

Overcrowding from 1940 Census data for percent
of dwellings with 1.5 or more occupants per room

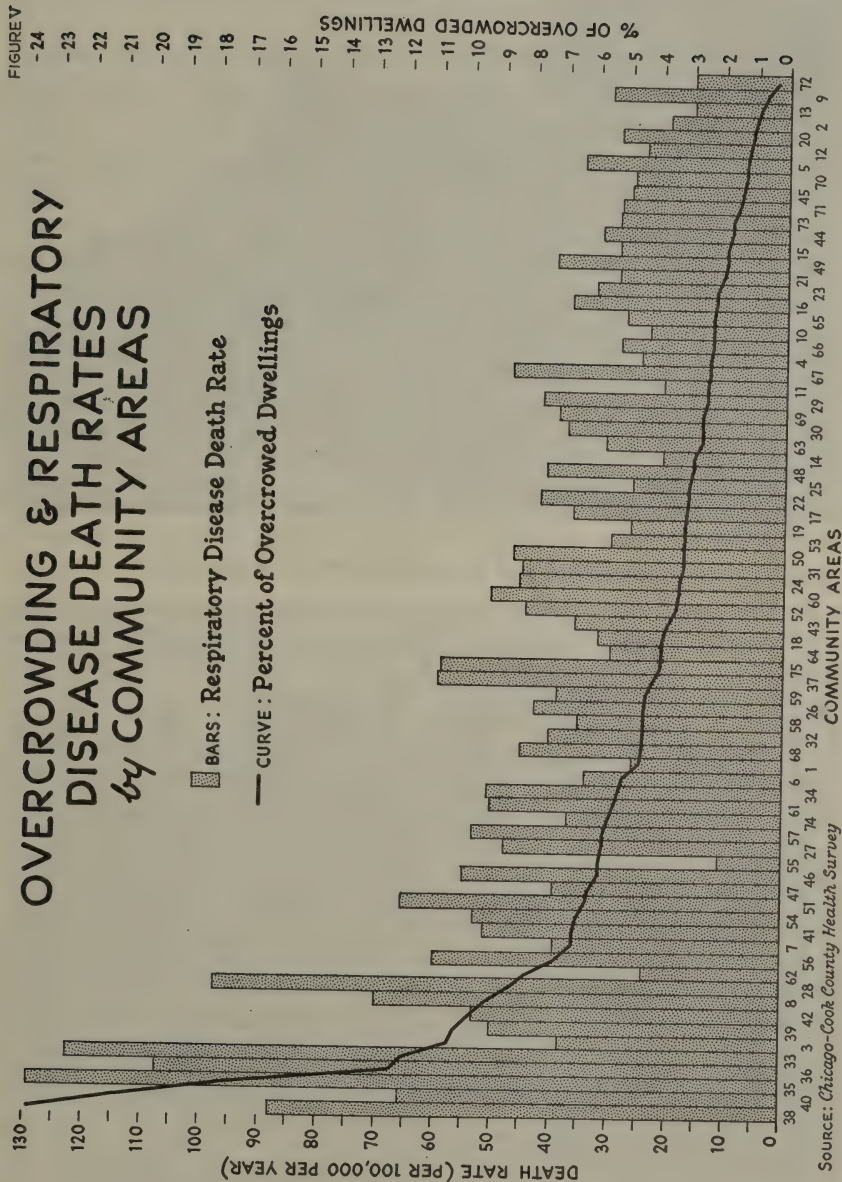
■ BARS: T. B. Death Rate (All Forms)

— CURVE: Percent of Overcrowded Dwellings



Source: Chicago-Cook County Health Survey

OVERCROWDING & RESPIRATORY DISEASE DEATH RATES by COMMUNITY AREAS



Source: Chicago-Cook County Health Survey

FIGURE V

gested quarters.¹³ Comparison between structural deterioration of homes and death rates from tuberculosis also shows some correlation.

These findings show clearly that both housing and health authorities in Chicago should focus more attention on improving conditions in these twenty-six areas. Enforcement of maintenance and occupancy regulations is needed and must be accompanied by provision of sufficient dwelling units for the people in these crowded areas so that enforcement of these regulations may be possible.

Other factors which contribute to unhealthful living conditions are: lack of sanitary facilities; inadequate space for storing and preparing food; insufficient heat, light, and ventilation; crowding of structures on the lot; traffic hazards; the presence of commercial and industrial activities in the residential neighborhood; and the lack of recreational facilities. Illustrations on pages 401-403 show some of these conditions.

RELATION OF BUILDING CODE TO HOUSING Section V of the Illinois Revised Statutes gives the city of Chicago the authority to establish rules governing the erection and the maintenance of buildings. The need for protecting life and health is the basis of these rules, and it is with this intent that the present complex code was formulated.

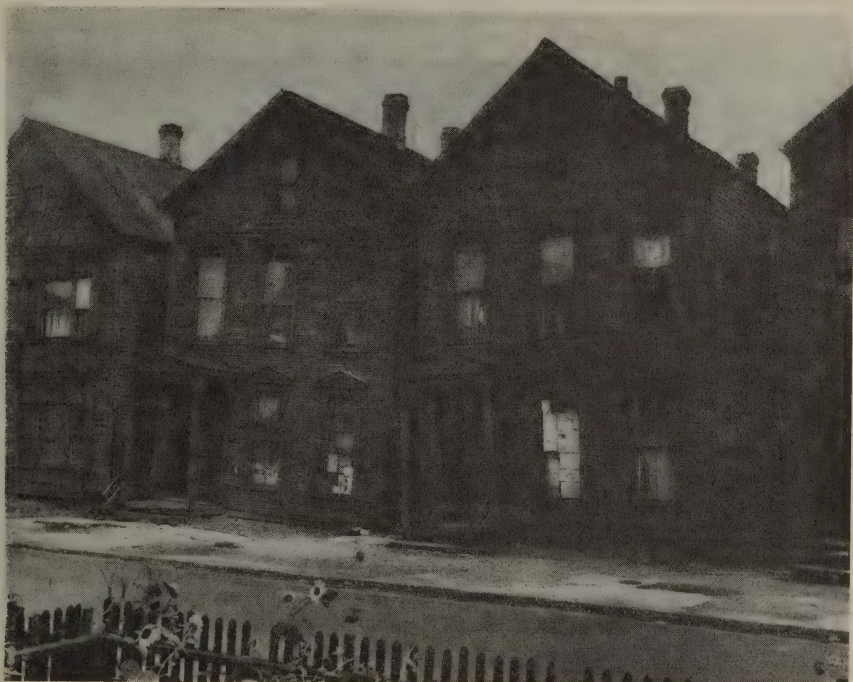
The enforcement of regulations on housing is the primary responsibility of the building department, although the following departments of the city government have concurrent responsibilities: public works, inspection of steam boilers, smoke inspections and abatement, and fire. Before the consolidation of service which occurred following the Pierce Foundation's recommendations, these departments and the Board of Health in Chicago had a divided responsibility for enforcing housing regulations. The consolidation reduced the number of departments by two, but the number of administrative groups which obtain appropriations has not been reduced. A number of departments contribute funds and personnel for enforcement by lending inspectors to the building department. This arrangement is undesirable, as it confuses the inspectors and decreases the effectiveness of their administration.

¹³ The National Health Survey was conducted in 1935-36 by the U. S. Public Health Service. It covered 2,500,000 persons in 700,000 households by house-to-house canvass methods. The survey was conducted in 83 cities (in 18 states) (see "Illness and Accidents among Persons Living under Different Housing Conditions," in *Public Health Reports*, LVI, 69-40).



Courtesy of Metropolitan Housing Council

OVERCROWDING OF BUILDINGS ON THE LAND



Courtesy of Metropolitan Housing Council

AN EXAMPLE OF CROWDED, SUBSTANDARD HOUSING



Courtesy of Chicago Housing Authority

CROWDED BUILDINGS ON NARROW LOTS—WITHOUT PROPER SIDE
LIGHT AND VENTILATION



Courtesy of Metropolitan Housing Council

FIRE-GUTTED BUILDINGS USED AS RESIDENCES BECAUSE OF HOUSING
SHORTAGE



Courtesy of Chicago Housing Authority

OVERCROWDING CAUSED BY CONVERSION OF BUILDING TO ONE-ROOM
APARTMENTS



Courtesy of Metropolitan Housing Council

A TYPICAL CLEARED AREA NEAR THE LOOP

The scope of building regulations in Chicago is determined entirely by the Chicago City Council, as is each detailed specification of the present code. Although the regulation of building has grown to be a highly technical field, each provision of the regulations must be passed by the council. The aldermen are concerned with many other phases of the city government and can devote only a limited amount of time to consideration of building ordinances. As a result, the code is rewritten every five to ten years, with constant amendments between periods of revision. More than 200 sections of the 1939 code had been revised one or more times by the end of 1945.¹⁴ There is consequent confusion to both the builder and the enforcement agencies, since both must keep informed concerning current code regulations.

The manner in which the existing code is prepared often makes it a virtual specification of materials and methods. The Pierce Foundation points out that "the degree of rigidity with which the regulations are written shows no consistency. In some cases the objective is formulated, thus forming a basis for judging the equivalency of an alternate assembly of materials. In many other cases, the method of compliance required is specifically stated by describing an approved means of compliance."¹⁵

As changes in the code are made by the legislative body at the insistence of an interested group, these changes often require performance in excess of that needed to protect life, safety, and health. Building trades, contractors, and well-intentioned public officials have all contributed to requirements of the code which increase the cost without adding to the safety or livability of the structure. In addition, the practice of specifying what is permitted rules out the use of new materials and construction methods which are acceptable elsewhere but are not specifically mentioned in the code.

The 1939 code, with its revisions, was compared with the thirty basic principles of healthful housing formulated by the American Public Health Associations' Committee on the Hygiene of Housing. The comparison indicated that some of the principles, especially those which relate to fundamental physiological and psychological needs, are not covered adequately. Table 71 lists these principles and indicates whether or not each principle is covered by one or more

¹⁴ Chicago Association of Commerce and Industry, *Building Regulation in Chicago—an Analysis and Recommendations*, Chicago, The Chicago Association of Commerce and Industry, November, 1945, p. 11.

¹⁵ *Ibid.*

TABLE 71. EXTENT TO WHICH PROVISIONS IN CHICAGO CODE COVER ADEQUATELY THE A.P.H.A. BASIC PRINCIPLES FOR HEALTHFUL HOUSING

| BASIC PRINCIPLES | COVERED BY CHICAGO CODE | |
|--|----------------------------|----|
| | Yes | No |
| <i>Fundamental physiological needs</i> | | |
| 1. Maintenance of a thermal environment which will avoid undue heat loss from the human body | X | .. |
| 2. Maintenance of a thermal environment which will permit adequate heat loss from the human body | X | .. |
| 3. Provision of an atmosphere of reasonable chemical purity | X | .. |
| 4. Provision of adequate daylight illumination and avoidance of undue daylight glare | .. | X |
| 5. Provision for admission of direct sunlight | .. | X |
| 6. Provision of adequate artificial illumination and avoidance of glare | .. | X |
| 7. Protection against excessive noise | .. | X |
| 8. Provision of adequate space for exercise and for the play of children | .. | X |
| <i>Fundamental psychological needs</i> | | |
| 9. Provision of adequate privacy for the individual | .. | X |
| 10. Provision of opportunities for normal family life | .. | X |
| 11. Provision of opportunities for normal community life | .. | X |
| 12. Provision of facilities which make possible the performance of the tasks of the household without undue physical and mental fatigue | .. | X |
| 13. Provision of facilities for maintenance of cleanliness of the dwelling and of the person | X | .. |
| 14. Provision of possibilities for esthetic satisfaction in the home and its surroundings | .. | X |
| 15. Concordance with prevailing social standards of the local community | X | .. |
| <i>Protection against contagion</i> | | |
| 16. Provision of a water supply of safe sanitary quality available to the dwelling | X | .. |
| 17. Protection of the water-supply system against pollution within the dwelling | X | .. |
| 18. Provision of toilet facilities of such a character as to minimize the danger of transmitting disease | X | .. |
| 19. Protection against sewage contamination of the interior surfaces of the dwelling | X | .. |
| 20. Avoidance of insanitary conditions in the vicinity of the dwelling | X | .. |
| 21. Exclusion from the dwelling of vermin which may play a part in the transmission of disease | X | .. |
| 22. Provision of facilities for keeping milk and food undecomposed | .. | X |
| 23. Provision of sufficient space in sleeping-rooms to minimize the danger of contact infection | X | .. |
| <i>Protection against accidents</i> | | |
| 24. Erection of the dwelling with such materials and methods of construction as to minimize danger of accidents due to collapse of any part of the structure | X | .. |
| 25. Control of conditions likely to cause fires or to promote their spread | X | .. |
| 26. Provision of adequate facilities for escape in cause of fire | X | .. |
| 27. Protection against danger of electrical shocks and burns | X | .. |
| 28. Protection against gas poisonings | X | .. |
| 29. Protection against falls and other mechanical injuries in the home | .. | X |
| 30. Protection of neighborhood against the hazards of automobile traffic | .. | X |

regulations in the Chicago code. The following factors are of particular significance.

Although the Municipal Code of Chicago requires that outside windows be provided for each room, it contains no adequate provision against the exclusion of daylight by the crowding of adjacent buildings. Code regulations should include provisions for protection against excessive noise and adequate play space for children.

The code does not deal with the provision of privacy and the opportunities for normal family and community life. Certainly, five or six families using a community kitchen and a single toilet have little opportunity for privacy.

Requirements in regard to provision of adequate toilet facilities need revision. Under the present regulations, rooming and apartment houses are allowed ten sleeping rooms for each water closet with the result that only one facility may be available for as many as twenty people of both sexes.¹⁶

The code contains no requirement for the refrigeration of food. While no statistics are available as to the number of persons who become ill from food improperly refrigerated, the common practice among families in buildings without refrigerating facilities of keeping perishable foods on windowsills certainly provides plentiful opportunity for bacterial contamination of this food.

The code makes no attempt to decrease home accidents by requiring installation of improved mechanical equipment and features in home design which will lessen the danger of accidents. The code does require repair of conditions likely to cause home accidents.

Protection of a residential neighborhood against traffic hazards has so far not been made a part of the city code. Although attempts are being made to direct heavy traffic to arterial streets and thus decrease the travel on residential streets, positive legislation might do much to bring about greater realization of these efforts.

PERSONNEL OF THE HOUSING BUREAU The activities of the Bureau of Housing Inspection are co-ordinated with those of all other bureaus of the Department of Buildings through the chief sanitary inspector as the bureau chief. The staff consists of the 13 sanitary inspectors transferred from the health department to the building department when the Bureau of Housing Inspection was organized, 12 plumbers borrowed from the Division of Water Pipe Extension, who work with the sanitary inspectors in the investigation of complaints,

¹⁶ Chicago Code, 48-66.

and 8 temporary employees engaged as canvass or survey inspectors in housing inspection. The bureau uses the stenographic pool of the building department.

ADMINISTRATION The office space assigned exclusively to the Bureau of Housing Inspection is occupied by four desks, at two of which complaints are received. The chief sanitary inspector and an assistant use the remaining desks. Tables belonging to another bureau adjoin these desks and are occupied by a group of building inspectors from another bureau during the morning. Because of the lack of space, the housing inspectors cannot report to the office in the mornings before starting on their daily round of inspections. The inspectors go directly from their homes to begin the inspections. They complete this work in time to write up their records and report to the office at 3:30 to 4:00 P.M. Here they receive the day's accumulation of complaints for their districts, or, in the case of the canvass inspectors, occasional special assignments. After this material has been collected by the inspectors, they are allowed to leave.

While the enforcement of the code relating to new construction rests with a number of bureaus, the chief responsibility for enforcement of regulations in regard to the maintenance and occupancy of existing housing rests with the Bureau of Housing Inspection of the Department of Buildings.

The duties of this bureau are, with the exception of safety violations in housing and the recently imposed responsibilities for rat control, those which it received as the Section on Community Sanitation in the health department. These responsibilities include the investigation of complaints of nuisances and insanitary conditions, ordering repair or vacation and demolition of buildings unfit for human habitation, and the supervision of gas fumigation for vermin.

The inspection of industrial and commercial establishments to determine their compliance with the sanitary code before the city issues a license is also part of their duties. Business establishments inspected include filling stations, florist shops, shoe repair shops, beauty parlors, barber shops, mortuaries, and bird stores. Licenses are issued to scavengers and to migrant camps through this bureau.¹⁷

The records of the bureau show that a majority of the inspections made were because of complaints grouped under the general heading of housing. Actually many of these inspections represented visits made in response to complaints about insanitary conditions in the

¹⁷ See also Chapter 17.

neighborhood and had nothing to do with the actual dwelling, but the records do not go into such detail.

INSPECTION PROCEDURES Each of the inspectors assigned to a district is responsible for investigating the complaints which occur in the district. He reports violations, recommends the action to be taken, and makes the necessary reinspections. The inspectors assigned to the housing canvass have about the same responsibilities of reporting and recommending action, but they are assigned to an area by a supervising inspector. They must examine each structure used as a dwelling and report all violations of the code pertaining to maintenance and occupancy.

The records of the bureau show that the inspectors assigned to complaints make from 11 to 14 visits each day they are in the field. There is no significant difference in the number of inspections made by inspectors with widely scattered distant districts and those with relatively compact areas near the "Loop." During the first six months of 1946, the inspectors averaged 11.3 inspections for each of the estimated 3,300 man-days spent in the field.¹⁸

This number of inspections is believed to require about three to five hours.¹⁹ An additional one to one and one-half hours is used for recording information and preparing reports. The execution of these functions does not, however, add up to an eight-hour day (the plumbers are paid for nine hours each day). The inspectors are generally agreed that inspections cannot begin before 10:00 A.M. Allowance is made for the people to be awake and have finished with their early morning duties.²⁰ While the office closes at 4:45 P.M., the inspectors are allowed to leave any time after 4:00 P.M., presumably in order to prepare for the next day's inspections at home.

The chief sanitary inspector examines the inspectors' records to see that they have made the required number of visits. The "reviewer" passes on all recommendations made by the inspectors for

¹⁸ The exact number of man-days spent in field inspections could not be obtained. The chief sanitary inspector estimated that three of the inspectors are required for work other than field inspection. It is estimated that with the exception of three days per inspector per month allowed for leave, all other inspectors worked full time on inspections.

¹⁹ Observation of inspectors made in the field is the basis for establishing this estimate. Every inspector observed made within three hours more than the average number of inspections reported daily. No inspectors were accompanied who had widely scattered complaints and who had to rely on public transportation.

²⁰ This was the time set for starting by the inspectors who were accompanied on their visits.

action against the violators. There is no check in the field on the thoroughness or accuracy of the inspection.

The need for additional supervision was indicated by the records of the canvass inspectors which were compared with inspections by other agencies. Of 172 structures in an area indicated by bureau records to be completely surveyed, only 69 structures had been inspected. Duplicate inspections (one and in some cases two) had been made on 23 of the inspected structures; all had occurred within thirty days of the initial inspection. The omission of 60 percent of the structures in an area supposed to be completely surveyed and the duplication of inspections in one third of the 40 percent surveyed probably are not typical occurrences, but this example shows the need for increased surveillance on the part of the supervisors.

Control over the number of inspections appears to be adequate, but control over the quality is lacking. Observation of the inspectors indicates that they gather the facts rapidly without telling the violator what they find and without making suggestions for correction. With the emphasis placed on a required number of inspections each day, the importance of a thorough inspection and its opportunities for education of the complaineé and the violator are forgotten. This is largely the fault of the system and the instructions under which the inspectors function.

The inspection data are used as material for routine monthly and annual reports. The boundaries of the districts are theoretically changed when the inspection load for individuals becomes greater than they can carry. The records are not used to picture the amount of time required to abate violations; nor is any summary made to show the amount of time spent on complaints of little or no health significance. The data are not used to indicate whether special health problems are occurring in certain sections of the city or whether the percentage of unjustified complaints is higher in some parts of the city than in others. No record is kept to determine whether complaints from dwellings where serious health hazards are most likely, such as complaints about sewage disposal or plumbing, are promptly investigated.

OFFICE PROCEDURES AND METHODS OF FILING A description of the method of keeping records will be given to permit understanding of this important function. The description will be concerned with processing of records for complaints, for violations, and for the house-to-house canvasses.

Complaints.—Although complaints may be made by letter, by a personal visit to the inspector's office, or by telephone, most of the complaints come in over the telephone. Two persons are assigned full time to receiving complaints. For each complaint an assignment sheet is filled out in duplicate. The original goes to the inspector from whose area the complaint comes, while the carbon copy is placed in the files as a "tickler." The inspector makes an inspection and records his findings on an inspection card, which is filed with the tickler.

Violations.—Inspectors note violations on cards. These cards then go to the stenographic pool of the building department, which issues a notice to the owner or agent of each building in which a violation has occurred that the violation must be corrected within a specified period of time. At the end of this period, a reinspection is made. During the interval allowed for correction, the inspector retains the assignment sheets. After each reinspection, the results are recorded on a reinspection sheet, which is supposed to be filed with the original record. Because of the inadequacy of the filing staff, however, these sheets often remain in a temporary file for some time. Members of the health survey staff in August, 1946, found reinspection sheets dated February, 1946, still in the "temporary" file.

Housing inspections.—A special form is used to record each routine housing inspection. These forms are filed separately, but records of violations reported by the housing inspectors are processed in the same manner as the violations noted as a result of complaint inspections.

Court cases.—Records of action on all cases taken to court are filed separately and are readily accessible. Records of cases in which a fine is levied or which have been dismissed are moved to a dead file even when there has been no abatement of the violation.

Filing procedures.—Records on complaints and inspections and on the progress made in each case are filed numerically by street number and then alphabetically by street. For instance, 1414 West Washington Street would be filed between 1413 and 1415 South Wabash Avenue. The material is filed loosely, except that the reinspection sheets are stapled to the original inspection card. The number of separate sheets may reach twenty to thirty for the more involved cases. This system requires extra time and results in worn files, since every sheet at the address desired, plus one or two pre-

ceding and following, must be scanned if one is to be certain of finding all the material.

The two file clerks are scarcely able to file the current material. Consequently, inspectors and other bureau employees take such records as they want from the files, without making any notation to indicate who has them, which could be used in ensuring the return of the records to the files. A system which gives everyone access to the files is bound to result in lost records. The extent to which this occurs is not known, but a study of the files made by the health survey staff indicated that some of the records were missing. The inspectors recognize the disadvantages of this procedure. Several reported that the loss of an entire file on a case had made it necessary for them to start the case again from the beginning.

In addition to the records of housing violations and complaints, the same file contains the inspection cards required for licensing barber shops, mortuaries, bird stores, and other businesses. The mixing of such subjects in the file makes the obtaining of records on any subject more difficult.

The inclusion of so-called "dead" material on abated cases in the same file with the active cases causes a bulky and awkward collection of records. Some records on cases abated one and one-half years ago were still in the file. In addition, there is a "dead" file in which records are stored, but with a complete lack of system. These conditions reflect the inadequacy of the filing staff for the numerous duties assigned to them.

There is no system of common files or of cross-indexing the files in each bureau; nor is there any co-ordination between the bureaus in preparing cases for court action. Occasionally cases have occurred in which two bureaus had separate suits in court simultaneously against the same address.

The review of the records shows the need for a master card or folder on which all complaints and inspections at one address are recorded. Much time is wasted in searching through the numerous sheets which frequently accumulate on one case in order to find pertinent facts. A folder for each address would also do much to eliminate misfiling of individual sheets. While the assignment sheet on which the original complaint and the reinspections are recorded is supposed to be returned to the file when the violation is abated, the review of the records indicated that a very substantial proportion of

the assignment sheets either were not in the file or had been incompletely filled out by the inspector. As a result, to obtain any information about a case it may be necessary to read every sheet in the file.

Many cards on one address, coupled with some inaccurate filing, cause notations to be written on one assignment sheet when they concern another and reinspection sheets to be stapled to the wrong original. In view of the number of opportunities for this type of error, however, the number of such mistakes found was surprisingly small. Credit for this is due to the vigilance of the file clerks.

ENFORCEMENT OF HOUSING REGULATIONS A substantial number of the violations which are corrected are abated after receipt of the first notice. Even if a violation is still unabated after the termination of the period allowed for correction, the violator is granted a continuance (extension of time) so long as he appears to be acting in good faith. At the expiration of each continuance, a reinspection is scheduled to determine whether the correction has been made. The time when inspections shall be made is left to the judgment of the inspector.

When abatement cannot be secured through the inspector's efforts alone, the violator is asked to appear at a hearing before members of the bureau. For the first six months in 1946 the records of the bureau show that 1,787 hearing board notices were issued and 1,369 persons acknowledged the notice either by telephoning, sending an agent, or appearing in person. Apparently many of the violators or their agents respond to the summons by telephone, and these telephone conversations with the inspectors are considered hearings by the bureau.

Theoretically, each hearing affords an opportunity for the inspector to hear the violator's reasons for failure to comply and to convince him of the reasonableness of the requirement and the necessity for his compliance. Hearings, however, are scheduled for only one day each week, at 2:00 P.M., and they are completed by 4:00 P.M. Since study of the January-September, 1946, records of the bureau reveal that sixty to ninety cases are scheduled for each hearing, obviously, even though many are "telephone hearings," the short time allowed in relation to the number of cases processed indicated only perfunctory hearing and action. In general, the violator is given additional time to make corrections if he promises to do so.

The facilities for holding hearings are very limited. Three or four of the bureau's most experienced men hear cases simultaneously.

The space allotted to this function is so limited that violators stand shoulder to shoulder. Two of the officials hearing the cases are seated at desks, while the other one or two stand near. The mixture of excuses and opinions and the desire of the officials to conclude the hearings as speedily as possible destroy the dignity and respect which the hearings should command.

In spite of these handicaps, additional corrections are obtained as a result of this practice. A study of 90 cases in which one or more hearing notices were issued indicated that 54 violators acknowledged the notice, either by personal appearance or by telephone, and promised correction as a result of the discussion at the hearing. The summons was ignored by 31 violators. Five violators never received the notices, because they were incorrectly addressed.

When the bureau has exhausted its resources and has been unsuccessful in abating a violation, the case is recommended to the city prosecutor for suit. When evidence about a substantial number of cases has accumulated in the bureau, the data are sent to the prosecutor—generally biweekly. The day before the trial of each case, the inspector who is to testify usually makes a final inspection. Two inspectors in the bureau ordinarily prepare and give most of the court testimony.

ADEQUACY OF REPORTING AND EVALUATION METHODS Methods of reporting and evaluating the information obtained by the inspectors should form the basis for intelligent planning and administration of any housing enforcement program. The activities of each inspector in the housing bureau are reported daily, and these reports are summarized monthly. Merely statistical information about the number of activities performed is given, however.

A report of the activities of the bureau inspectors for the first six months of 1946, for example, tabulates the number of inspections and reinspections made each month and during the total period for each of the following types of activity: housing complaints; housing surveys; nuisance complaints; business units; license applications; law cases.

Under housing survey inspections, the number of dwelling units and the total number of rooms inspected are also tabulated, together with the number of abatements. A further section in this report tabulates the number of total notices, total abatements, and total calls made each month and during the six-month period.

The report also gives the following information for the six-month

period: cases recommended for suit, 406; cases disposed of in court, 398; bureau hearings assigned, 1,787; bureau hearings defaulted, 418; uninvestigated complaints on hand, 421; number of investigations on hand June 30, 4,270. While such a report shows the activities in which the bureau is engaged and the corrections obtained, it offers little aid in planning a program of "prevention" instead of merely "trouble shooting."

The data collected by the inspectors assigned to the house-to-house canvass are filed after the violations are noted. No effort is made to point out the areas in which the illegal conversion rate is high, communities in which basements are being converted to living quarters, structures which have deteriorated so as to make demolition mandatory, blocks in which the rat hazard is especially high, and areas in which overcrowding by rooms or facilities offers possibilities for an explosive disease outbreak. While the information collected is admittedly inadequate, facts such as these could be obtained from the existing records and would aid the Board of Health, the Department of Buildings, the Chicago Housing Authority, the Chicago Plan Commission, and other municipal agencies to plan their activities in regard to substandard housing.

The actual inspection procedures are not defined clearly, especially for inspectors assigned to the canvass. When complaint inspectors investigate a specific item, their only problem is to determine whether or not it is in violation of the code, while housing inspectors must endeavor to discover all the sanitary and safety violations present in a dwelling. The schedules are so prepared that much is left to the judgment of the inspector. Field observation of the inspectors showed some lack of uniformity in their interpretations of similar conditions.

QUALIFICATIONS OF INSPECTORS The 13 sanitary inspectors are all under civil service, and the duration of their employment ranges from 20 to 38 years. The 12 plumbers are borrowed from the water pipe extension division. The 8 so-called "housing inspectors" are temporary employees appointed under the patronage system; they have served for various periods up to 16 months.

No further information can be presented about the qualifications of the individual inspectors, since the Department of Buildings did not distribute to its personnel forms used by the Chicago-Cook County Health Survey for collecting personnel data. A high school education is reported to comprise the general qualifications for either

a temporary or a civil service inspector in this bureau. Persons with experience in a building trade or a profession are preferred, although this experience is not required.

Even though personnel information was not available for the inspectors, other methods are useful for determining qualifications and ability. Chief of these is a measure of actual performance. One half of the abated cases required from 3 to 10 inspections. The average number of inspections for each abated case was 3. Two fifths of the unabated cases received 3 to 12 inspections, and an average of 2.4 inspections was made on each case. Is the number of inspections required by this portion of the cases high because of the perversity of the violators, or is the inspector failing to make the most of each inspection? Is he, in addition, failing to mark his records accurately to show corrections when they are made?

The length of time required to abate a violation is another measure of the inspector's ability, provided his work load will allow the reinspections to be made as soon as the violator has been given sufficient time to comply. Within thirty days after the complaints were received, 16 percent were abated. In an eastern city, on the other hand, 37 percent of the cases were closed during the first week and an additional 21 percent the second week.²¹ The excessive time lapses which are noticeable between reinspections in Chicago show that these delays contribute to the delay in obtaining abatement.

Forty-one of the 300 violations marked "abated" recurred, an indication that in 14 percent of the cases marked "abated," either the violation had not been corrected or the repair had been so inadequate that it soon became the source of another complaint.

An observer accompanied several inspectors on field visits. The general approach of the inspectors was satisfactory, and some of them used ingenious methods for obtaining information. One serious omission noted in some cases was failure to fill out the inspection sheet at the time of the inspection. In general, it can be said that the complaint inspectors investigate only the items causing the complaint and do not concern themselves with other possible insanitary conditions or practices which may exist on the premises investigated. The eight canvass inspectors are concerned with all complaints and often record a number of them at one address.

Association with employees of the bureau reveals some lack of

²¹ M. Allen Pond, "Nuisance Complaints and Municipal Health Department Practices," *Public Health Reports* (p. 26), LX, 381-88.

esprit de corps, which appears to be caused partially by failure to define adequately the purpose of the inspections. The greatest contributing factor, however, is lack of support in obtaining abatements from the city government and from the courts. A call from an alderman to "go easy on John" may be prompted by the best of intentions, but it does not permit the following of a definite policy for dealing with all potential violators. The reversal of findings presented by the inspector leads only to his frustration.

SALARIES OF HOUSING INSPECTION STAFF Table 72 brings out clearly the inequality of the salaries for the varying classifications of inspectors doing essentially the same work. It is doubtful whether

TABLE 72. 1946 SALARIES OF STAFF OF THE BUREAU OF HOUSING INSPECTION^a

| <i>Title</i> | <i>Number of Persons</i> | <i>Annual Salary per Person</i> |
|----------------------------------|------------------------------|-------------------------------------|
| Chief Sanitary Inspector | 1 | \$5,622 |
| Supervisor of Inspection | 1 | 3,462 |
| Sanitary inspectors | 12 | 2,964 |
| Sanitary inspector | 1 | 2,472 |
| Housing inspectors | 8 | 2,472 |
| Plumbing inspectors ^b | 12 | 4,563 |
| Junior file clerk | 1 | 2,400 |
| Messenger (file clerk) | 1 | 1,494 |

^a Chicago Budget, 1946.

^b Loaned to the building department by the Division of Water Pipe Extension.

the salaries of the housing and the sanitary inspectors will permit an adequate standard of living with prices at their present level. It should be no surprise, therefore, to learn that some of the inspectors are said to hold other positions. No attempt was made, however, to determine how many supplement their income from the city with other employment.

According to the terms under which temporary inspectors are appointed, they may receive the starting salary only and may not be promoted, regardless of their years of service. While inspectors under civil service are advanced by promotion, the starting salary is only \$2,472 per year and the maximum salary \$2,964, to which they are eligible after three years' service.²² The unpromising future for these inspectors must increase the difficulty of hiring new men who are competent and well trained. The sanitary inspectors now employed

²² Information was supplied by the chief sanitary inspector of the Bureau of Housing Inspection. The salaries quoted are higher than the basic salaries paid because added "cost of living" allowances are included.

were first placed on the health department pay roll during the period 1908-26.

TRAINING OF INSPECTORS The building department has no coordinated training programs for personnel in its bureaus. Any improvement in knowledge or in technique must be undertaken on the initiative either of a single individual or of the bureau directors. In the housing inspection bureau the training period for new inspectors is five to eight days. It consists of one or two days spent in the office learning such activities as preparing records, reporting violations, and other general office functions. The remainder of the period is devoted to field work, during which the trainee is assigned to more experienced inspectors; often he rotates between two or three for several days. During this time he makes visits, receives training in approaching property owners, and fills out the inspection cards. After several days of this experience, he is assumed to be trained and starts to make inspections by himself. There is no provision for checking his work occasionally to determine its quality.

The instruction does not include any mention of the factors which when combined can allow sewage to be drawn into the water system; nor is any measure given whereby the inspector can determine whether light and ventilation are inadequate. The inspectors are not trained to identify evidence of rats or household vermin, such as bedbugs and cockroaches, and the instructions relating to deterioration are not sharply defined.

The results of this lack of training are shown by comparison of inspections made previously. The omission by the housing inspectors of items such as rats and vermin, light and ventilation, and combustible partitions indicates the need for additional training.

The chief sanitary inspector reports that staff meetings and occasional training sessions are held. These usually deal with some current problem, and they are conducted by one of the more experienced inspectors or by the chief inspector. Since no training sessions were scheduled during the three-month period of this study, observation of the techniques and material presented was impossible.

COMPARISON OF INSPECTION METHODS To determine the accuracy of the data on violations reported by the housing survey inspectors, their reports in two areas were compared with the results of the surveys made by the Chicago Housing Authority and in a third area, with reports of an area studied by the Michael Reese Hospital and the Chicago Housing Authority. Both studies used items in the

Chicago housing code as the basis for recording violations. Only major structural violations were selected for comparison to eliminate the possibility that minor changes had been made between the inspections by the different groups.

The items considered in relation to violations were: (1) fire hazards as represented by inflammable partitions or lack of a second exit from the second floor or above; (2) rats and vermin as observed by the inspector or reported by the tenant; (3) defective interior walls where sections of the plaster had fallen or where a hole permitted the inspector to see daylight through the wall; (4) a leak in the roof, determined on the basis of evidence such as the falling of plaster from the top-floor ceiling or reports of leaks by the tenants; (5) stairs (both interior and exterior) in which the guard rail was missing or the steps were so worn as to be unsafe; (6) light and ventilation, as defined by the section of the code which requires that every room shall have an exterior window equal to 10 percent of the floor area, or a report by the inspector that the dwelling was dark and odorous (artificial light all day was still necessary in some rooms with the required window area because the adjacent building was so close); (7) plumbing, including leaking pipes leading to fixtures, failure of toilet to flush, clogged fixtures, and similar conditions. None of the inspections provided data on cross-connections, submerged toilets, inadequate piping, and other factors which might cause pollution of the water supply through back-siphonage.

An area located on the south side of Chicago and bounded by Thirty-ninth Street on the south, Thirty-seventh Street on the north, Vernon Avenue on the west, and Rhodes Avenue on the east was the first area selected for comparison. This area, called the "Rehabilitation Area," was studied by the Chicago Housing Authority to determine the cost of placing the structures there in acceptable living condition.

Table 73 shows the extent of agreement and disagreement on violations of these seven items reported by the investigators for the Chicago Housing Authority and by the inspectors of the Bureau of Housing Inspection. Violations in regard to roofs and plumbing were the only items in which the two groups agreed in even 50 percent of the cases. The percentage of disagreement for the other items varied from 75 to 99 percent.

The second comparison between reports from the Bureau of Housing Inspection and the results of a Chicago Housing Authority survey

TABLE 73. COMPARISON OF FINDINGS IN IDENTICAL BUILDINGS WITHIN SIX-MONTH PERIOD BY INSPECTORS OF C.H.A. AND B.H.I.
(DATA FOR "REHABILITATION AREA")

| ITEMS | NUMBER OF CASES | | | PERCENTAGE OF TOTAL CASES DISAGREEING |
|-----------------------|---------------------------------------|--|--|--|
| | <i>Agreement on Violation</i> | <i>C.H.A. Finds Violation; B.H.I. Does Not</i> | <i>B.H.I. Finds Violation; C.H.A. Does Not</i> | |
| Fire hazard | 10 | 60 | 0 | 86 |
| Rats and vermin | 9 | 62 | 0 | 87 |
| Walls | 18 | 54 | 0 | 75 |
| Roof | 35 | 35 | 2 | 51 |
| Stairs | 13 | 57 | 1 | 82 |
| Light and ventilation | 1 | 69 | 0 | 99 |
| Plumbing | 38 | 30 | 3 | 46 |

was made in an area called "Area C," which is bounded by Browning Avenue on the north, Thirty-sixth Place on the south, Vincennes Avenue on the east, and Rhodes Avenue on the west. Since the number of rooms in every house was not verified by actual inspection, the data cannot be considered as accurate as those obtained in the "Rehabilitation Area."

As Table 74 indicates, there was greater agreement between the findings of the two groups in "Area C" than in the "Rehabilitation Area." The fact that some of the bureau's most efficient inspectors

TABLE 74. COMPARISON OF FINDINGS IN "AREA C" BY CHICAGO HOUSING AUTHORITY INVESTIGATORS AND BUREAU OF HOUSING INSPECTORS

| ITEMS | NUMBER OF CASES | | | PERCENTAGE OF TOTAL CASES DISAGREEING |
|-----------------------|---------------------------------------|---|---|--|
| | <i>Agreement on Violation</i> | <i>C.H.A. Finds Violations; B.H.I. Does Not</i> | <i>B.H.I. Finds Violations; C.H.A. Does Not</i> | |
| Fire hazard | 34 | 40 | 0 | 54 |
| Rats and vermin | 7 | 67 | 0 | 91 |
| Walls | 53 | 19 | 6 | 32 |
| Roof | 57 | 18 | 4 | 28 |
| Stairs | 44 | 28 | 5 | 43 |
| Light and ventilation | 35 | 43 | 0 | 55 |
| Plumbing | 58 | 9 | 11 | 26 |

are assigned to this area probably accounts for the better comparative record. The standards used by the Chicago Housing Authority staff were the same for both areas.

The third area lies between Lake Park Avenue on the east, Cottage Grove Avenue on the west, Thirtieth Street on the north, and Thirty-first Street on the south. The schedule for this area was comprehensive, and violations were noted based upon the Chicago housing

code. The investigator entered every room of each dwelling for which a schedule was prepared.

As in the other comparisons, many violations were reported by the investigator in this third area which were not recorded by the housing inspectors. While the number of cases of disagreement is not as high as in the "Rehabilitation Area," there is disagreement in 50 percent of the violations recorded.

Several structures in these areas, selected at random, were inspected by members of the Chicago-Cook County Health Survey staff. The inspections were made on the seven items specified earlier, and the Chicago housing code was used as the basis for determining a violation. Schedules were executed without referring to the data collected by either of the inspection agencies, and the findings were returned to the office for comparison with the earlier inspections.

The survey staff's field inspections substantiated the indications of failure by the bureau inspectors to discover many violations, particularly in the following classes: (1) light and ventilation; (2) combustible partitions; (3) rats and vermin; (4) falling plaster and holes through walls; (5) leaky roofs; (6) plumbing arrangements which permit back-siphonage of sewage into the water-supply pipes.

On the other hand, the housing inspectors consistently recorded as violations lack of the required number of exits, leaky plumbing, broken toilet bowls or seats, and clogged waste lines.

In addition to the housing deficiencies listed above, comparisons were also made between the number of stories in various buildings and the number of dwelling units, rooms, persons, and bathing facilities reported by the inspectors. The most important of these has proved to be the information concerning bathing facilities. The form used by the bureau does not indicate which families have access to a bath, although it does record the number of baths in the structure. Several families were reported to be without bathing facilities in the Chicago Housing Authority studies, although the records of the Bureau of Housing Inspection indicated that these families shared a bath.

The number of rooms reported by the Chicago Housing Authority staff in 34 of 71 structures in the "Rehabilitation Area" differed from the number reported by housing bureau inspectors by from 2 to 18 rooms. In 80 percent of the cases in which the reports did not agree, the housing inspectors had reported from two to five rooms more or less than actually existed.

There is little basis for comparing the data obtained by the sanitary inspectors who are assigned to complaint investigation. Some cases were noted in which the sanitary inspector visited a structure in answer to a complaint within a few days of the time the building was inspected on the routine canvass. The sanitary inspector's report was usually concerned with one item, while the survey report showed other violations.

STUDY OF HOUSING INSPECTION RECORDS A study was made of the records of the Bureau of Housing Inspection in order to determine the frequency of each type of violation, the emphasis given to serious complaints, the methods of abating violations, their effectiveness, the length of time required, the efficiency of the filing system, and the accuracy with which the inspectors recorded their findings.

In making the study, 375 addresses were selected at random from the files. There were 576 cases recorded for these 375 addresses, each of which had been active at some time during the period January 1, 1945, to July 1, 1946. All the violations on which initial action was started on the same day were considered as a "case." Recomplaints on essentially the same items were not considered as a "new" case. Even with this inclusive definition of a "case," as many as seven separate cases were listed on a single address for the eighteen-month period. The average, however, was 1.5 cases for each address. A total of 840 violations was recorded for the 576 cases studied. Violations relating to plumbing formed the largest single group, 29 percent of the total. These violations included all defects in the water supply and sewage systems and basements flooded with sewage. Structural defects were the next largest group; they included falling plaster, broken floors, faulty stairs, and defects in roof gutters and downspouts. The number of garbage violations reported is surprisingly small when compared to reports from other cities. The division of responsibility between various city departments for the enforcement of garbage regulations in Chicago is probably the explanation.

Notices in regard to violations and the requirements for abatement are issued promptly after the inspectors have noted the violation. In 401 cases half the notices were mailed within three days of the first inspection, and nearly all were sent out within a week. Any delays in issuing a notice are due almost entirely to the time lapse between the making of the original complaint and the first inspection.

The types of violation which were abated were classified as "struc-

tural" or as "nuisance" types. The structural type was defined as one requiring the use of new material for correction; in this classification were included repairs to plumbing, roof gutters and downspouts, roofs, and stairs. The cases in which action was taken by the bureau on a combination of structural and nuisance violations were classified as structural cases. The nuisance type included violations such as improper handling of garbage, presence of vermin, excessive heat, odors, and violation of the code in regard to animals.

Sixteen percent of the violations were abated within 30 days, and an additional 14 percent within 90 days. The maximum percentage was approached at the end of eight months. The records indicate that the nuisance violations are not corrected as readily as those of a structural nature. Fifty-four percent of the 208 cases involving nuisances only were corrected, as compared with 62 percent of the 303 cases involving structural violations. The time required for correction was not significantly different for the two types of violations.

The percentage of abatements obtained for all the cases sampled was 59. While the Bureau of Housing Inspection reported a much higher percentage of abatements for all types of violations (including housing) for 1945 and the first six months of 1946, this higher percentage may be caused by the bureau's practice of recording as abated part of the violations which have been inactive for several months. For the purposes of this study, however, a case was considered "abated" only if it was so recorded in the files.²³ Failure of the inspectors to mark the records also may be responsible for at least part of the discrepancy between this sample and the bureau reports.

A study of the unabated cases showed that they accumulate at a uniform rate each month. Forty-six percent of the total nuisance cases were unabated, as against 38 percent of the structural cases. Thirty-one percent of both types had been pending for more than 12 months. Many of them appeared from the records to be important violations. Some were cases marked "hold for recommitment"; others, cases in which the original assignment sheet was missing. Still others, according to statements made by the chief sanitary inspector and the inspectors, were general cases which the inspector responsible had decided were "relatively unimportant." While such a procedure is probably necessary to avoid spending time on minor complaints,

²³ Some abatements were not supported by the record of an inspection; the chief sanitary inspector stated, however, that the inspectors are not required to fill out a reinspection form for the final inspection.

closer screening by those receiving the complaints, and decisive action by the inspector at the time of his first visit might be of some assistance in eliminating this group.

In classifying the 576 cases, the survey staff used, in addition to the terms "abated" and "unabated," a third term, "unjustified complaint," not used by the Bureau of Housing Inspection. This procedure was followed in order to avoid charging an inspector unjustly with complaints which were unabated because no violation was found on investigation. There were sixty-five unjustified complaints, including complaints about heat and other nuisances. Records on cases of this type are left in the files, since the bureau has formulated no uniform policy for handling them.

The records show that a summons to a departmental hearing was issued in 90 of the 401 cases in which notices of a violation were sent. In 5 cases, 2 hearing notices were issued, or 95 in all. Of the 31 violators who ignored the hearing summons, 1 was taken to court for suit. Either negotiations were continued with the others, or no further action was taken. An analysis of these cases indicates that more positive action is needed.

A study of the length of time elapsing before a complaint is answered shows that the majority of inspections are made within six days. The greatest number of complaints are investigated on the third day, and somewhat smaller numbers on the first, second, and fourth days. This response appears to be excellent and is marred only by the 11 percent of the complaints which require fifteen days or longer. On the basis of this data, more than two weeks is required before approximately 3,000 of the 27,000 or more complaints are investigated.²⁴ Since information obtained in the survey indicates that 13 of the 33 inspectors are responsible for nearly all these delayed cases, it is possible either that the work load is too heavy or that the inspectors do not apply themselves.

While the number of cases studied is too small to establish definite comparisons between the inspectors in their methods of answering complaints, several trends are apparent. Nine inspectors reported more than one half of the cases studied; seven inspectors were responsible for more than one half of the cases in which more than two weeks elapsed between the complaint and the first inspection. Seven of the nine inspectors reporting the most violations are also included

²⁴ The Bureau of Housing Inspection records for 1940-45 show that an average of more than 27,000 original inspections are made each year.

in the group requiring more than two weeks to investigate complaints.

THE MUNICIPAL COURT AND HOUSING REGULATIONS The establishment of a municipal court in Chicago was authorized by the state legislature in 1905, and its authority and responsibilities are given in Chapter 37 of the Illinois Revised Statute.

The present court system is headed by a chief justice and thirty-six associate justices, who are elected for six-year terms. The associate justice serves in any of the fifty branches of the court, as assigned by the chief justice, and assignments are made once a month. While the judges do not necessarily change assignments each month, their rotation comes with relative frequency.

Cases related to housing violations are heard on Wednesday in the so-called "license court." Assignment to the bench in this court is not particularly attractive because of the large number of cases and their "nuisance" character. The cases tried in the license court include violations of the code as it relates to fire, health, building, and electrical provisions. In addition, certain cases, such as failure to obtain a boiler inspection license, and garbage and refuse violations are referred to this court. Other license cases and smoke violations have been transferred from the license court to what is known as a "cafeteria court."

A desire on the part of the judges to be liberal with the electorate and, perhaps, during the recent war a recognition of the scarcity of labor and materials have given rise to what is known as the "compliance system" in the municipal court. The philosophy of this system is that compliance with the law is preferable to punishment of the guilty. Under this theory the violator is heard in court and given every opportunity to comply with the violated provision. In general, so long as he promises compliance, an extension of time is granted. As a result of this practice, cases are continued many times—occasionally as many as fifteen to twenty. Such a system has increased the load on the courts and has seriously impaired the effectiveness of the enforcement agency's final recourse in obtaining correction of violations.

PROCESSING VIOLATORS TO COURT BY BUREAU OF HOUSING INSPECTION Advocates of housing regulation reform have pointed out the tortuous channel through which violations taken to trial must go. To obtain data about this procedure, as well as records of the court action, an intensive study was made of forty-five completed

cases selected at random from the records on court cases in the Bureau of Housing Inspection. These cases occurred between January 1, 1945, and July 1, 1946.

All cases recommended for suit appeared to have had sufficient opportunity to comply. Each violator received an average of two written notices to make the corrections, and five cases received four or more such notices. All of the 45 violators had been invited to a departmental hearing, and 29 attended or acknowledged the hearing notice by telephone. They had been given an average of four months and twenty days from the date of the original complaint to comply before the bureau recommended suit. During this period the bureau had made an average of five inspections, sent out two notices, and summoned the violator to one hearing. Certainly, every reasonable effort, measured by the number of attempts, was made by the Bureau of Housing Inspection to obtain compliance. In 16 of the 45 cases suit was filed only after the violator had ignored the notice to appear at a bureau hearing.

Eleven of the 16 cases involved one or more plumbing violations, plus at least 1 additional item of major health significance. All except 2 cases involved violations which had a direct relation to the health of the occupants of the building. Four of the 16 violations were recommended for trial within one month after the hearing default, and 12, from one to over seven months later. The average time required for all cases considered was eighty-two days. The cases offering immediate and serious health hazards, of which there were 11, received no special handling.

Several factors may have contributed to this long delay. Perhaps the most important is that the bureau personnel know if the case is taken to court that the chances of abating the case or of punishing the violator are not good, that considerable delay will occur, and that additional inspections will be required. In addition, there may be an insufficient number of personnel to bring the suits, and inadequate co-ordination may exist between the inspectors' activities and those of the office staff.

After a case is recommended for suit, it remains in the bureau while the evidence is being prepared. The policy is to send a group of cases to the prosecutor's office every 10 to 15 days. The cases studied vary uniformly in this respect from 1 to 15 days, the average time lying between 7 and 8.

The prosecutor's office sets the trial date for each case, allowing

sufficient time for preparation by both parties. On the average, 27 days elapsed between the date on which the prosecutor's office received the case and the date it was scheduled for the first appearance in court. The minimum time for preparing the cases was approximately two weeks; one third of the cases required 30 to 50 days.

Of the 45 cases, 15 were settled at the first appearance in court. One was fined, 6 were dismissed as abated (although the bureau records show them to be unabated); 3 were declared non-suits because of a change of owners; and the remaining 5 cases were discharged for various reasons. According to the bureau records, only 2 had complied, although the possibility that the bureau records are not accurately marked as to abatement must be considered. Of the remaining 30 cases, which were continued on an average of twice each, 12 were unabated and 2 were abated only partially. Does this record indicate that the "compliance system" is accomplishing what it was intended to do? Would a consistent policy of trial to determine guilt and the assessment of a reasonable fine against the guilty contribute to a higher percentage of corrected violations?

The unabated cases which are dismissed by the court must be initiated again by the Bureau of Housing Inspection if further attempts to force compliance are to be made. This procedure requires another inspection, another notice, another recommendation for suit, and a second preparation of the material to be presented in support of this action.

PROCESSING OF CASES FROM FIRST COURT APPEARANCE The Metropolitan Housing Council for the past five years has been actively interested in the functioning of the license court to which suits against violators of housing ordinances are assigned. During this period representatives of the council have functioned as observers while the housing cases were being tried. The observers have included the acting director of the council and various trained professional assistants with experience in civic and social work.

At the request of the Chicago-Cook County Health Survey, the Metropolitan Housing Council made a special study of all housing cases which appeared in court during the period January 1—July 1, 1946, to determine the court's methods in hearing housing violations and processing cases.

Observers, usually working in pairs, were provided a desk and chairs adjacent to the judge's bench. They were thus in a position to observe all procedures and to take down all the pertinent data in

regard to the cases which appeared in the license court at the request of the Bureau of Housing Inspection during the six-month period. Cases continued from 1945 and terminated during this period, either by discharge, by fine, or by non-suit, were included in the study in order to furnish a complete picture of all cases terminated during this period.²⁵

In addition to the observation of court procedure and notation of action taken, certain cases in which many adjournments had been granted were discussed by the acting director of the Metropolitan Housing Council with officials of the Bureau of Housing Inspection and with the inspectors involved.²⁶ The housing bureau records of these cases were also examined. •

Action taken on terminated cases.—In Table 75 the 387 cases terminated during the period of study are classified according to the

TABLE 75. HEARINGS PER CASE FOR CASES CONSUMMATED IN
LICENSE COURT BETWEEN JAN. 1 AND JULY 1, 1946
(INCLUDING CASES CONTINUED)

| NUMBER OF HEARINGS PER CASE | TOTAL CASES | NUMBER OF CASES | | |
|-----------------------------------|----------------|-------------------|-------------------|--------------|
| | | <i>Non-suited</i> | <i>Discharged</i> | <i>Fined</i> |
| 1 | 100 | 64 | 13 | 23 |
| 2 | 123 | 90 | 10 | 23 |
| 3 | 70 | 50 | 7 | 13 |
| 4 | 39 | 27 | 5 | 7 |
| 5 | 25 | 18 | 2 | 5 |
| 6 | 11 | 7 | 2 | 2 |
| 7 | 7 | 4 | 0 | 3 |
| 8 | 7 | 6 | 0 | 1 |
| 9 | 0 | 0 | 0 | 0 |
| 10 | 1 | 0 | 0 | 1 |
| 11 | 1 | 0 | 1 | 0 |
| 12 | 1 | 0 | 0 | 1 |
| 15 | 2 | 2 | 0 | 0 |
| Total number | 387 | 268 | 40 | 79 |

number of hearings per case (1 to 15) and the type of action taken: non-suit, discharged, and fined. Non-suit cases include those in which the violation has been corrected or the property has been sold and a different owner is responsible. Of 268 non-suit cases, 204 had 2 or more hearings each, and a total of 676 hearings; 114 cases had 3 or

²⁵ Of the cases studied, very few were violations of a nature to require eviction of the tenants before they were corrected. For this reason no effort was made to separate these cases from those in which compliance could be attained more readily.

²⁶ Inasmuch as court reporters were not used to take down transcripts of court hearings or conferences and because records examined were not photostated, verification of the facts discussed in the cases receiving special study would be difficult.

more hearings each, totaling 496 hearings; 64 cases had 4 or more hearings each, or a total of 346 hearings. Other non-suit cases required up to 8 hearings each, while 2 cases had 15 hearings each before being dismissed.

A total of 77 warrants was issued for 59 offenders whose cases were subsequently non-suited, and in one case 4 warrants were issued. The time expended by inspectors, court personnel, prosecutor, judges, and police in connection with each continuance and service of warrant and summons in these cases represents a high cost to the taxpayers in bringing about belated compliance. In spite of this drain of manpower and city funds, no penalty was exacted by the court in any of these cases—not even court costs. The fact that it was necessary to issue warrants in so high a proportion of the cases indicates serious contempt for the court's processes. No doubt some of this contempt is bred by the court's record.

Examples of judge's action.—The following three examples are illustrative of the entry of a "nonsuit" by a judge on his own motion even over the objections of the prosecutor and the officials of the Bureau of Housing Inspection.²⁷ This procedure is in apparent contradiction to rule 46 of the municipal court.

Case A. The inspector testified that he had examined the premises involved two days before trial and found the house in question entirely without water, and in an insanitary condition.

Case B. A case involving faulty plumbing and lack of heat was non-suited with no compliance.

Case C. Another violation upon which proceedings were first instituted in 1943, and which had, during the course of subsequent suits, over 22 continuances, involved an inadequate supply of water, leaky roof, dangerous porches, and defective plumbing. Although the law specifically authorizes punitive measures on the basis of each day in which the owner is in violation, at no time was the defendant penalized. By transferring title to the property, the defendant escaped all penalties.

"Not-guilty" cases.—A finding of "not guilty" terminated 40 of the 387 cases. The defendants in these 40 cases, however, were given a total of 107 hearings before final discharge, or an average of 2.7 hearings for each "not-guilty" defendant. One case was continued ten times before the defendant was discharged without penalty.

Imposition of fine.—Seventy-nine cases were terminated by im-

²⁷ Notations on the court record are the basis for the statements made.

position of a fine.²⁸ Most of the penalties were \$25 or less, the most common amount being \$5.00 to \$10. Many of the fines were ordered satisfied by a payment of \$1.00 fine and \$1.00 costs, or \$2.00 fine and \$3.00 costs. The practice of assessing a fine and then reducing it to these amounts is common in the court. In most instances, neither the seriousness of the violation nor the history of the case appears to be taken into consideration in arriving at the amount of the penalty.²⁹

A prompt and orderly trial of cases and the imposition of lawful penalties thereon would have a salutary effect and result in improved general compliance. Experience in other agencies has shown that, conversely, delays, numerous hearings, discharges, and small fines breed disrespect for the process of the court and of the health and safety ordinances it seeks to enforce.

A study of the lapse of time occurring between the date of issuance and return of 116 warrants and the ages of 20 warrants not executed as of June 30, 1946, indicated that the majority required from two weeks to two months from the date of issuance for execution, with some outstanding as long as four to more than six months. Among those unreturned warrants on June 30, 1946, were some issued in February, 1946. There is no established control or followup on the issuance and execution of warrants or the recall thereof.

Among the cases studied, the average lapse was seven and a half months from the date of the original complaint until the date of dismissal by court. Following is an outline of the various steps: first complaint, January 1, 1946; first inspection, January 8; recommended for suit by bureau, May 21; first court appearance, June 26; final court appearance, August 17.

Summary of court action.—The orders entered by each of the seven judges assigned to the license court during the period studied are summarized in Table 76 for the 1,008 cases. The orders entered by the judge designated "7" in the table cannot be considered representative of the ordinary performance of this court. During his assignment to the license court for a four-week period in June, he inaugurated a number of reforms, among which was the clearing out of loiterers and the removal of tables and chairs around the clerks' work space. He announced publicly that he would permit no hanger-on of the court to take up his time between sessions. In addi-

²⁸ "Ex party fines" are not included, since the defendant was not present in court when such fines were imposed, and it was therefore not possible to consider these cases consummated.

²⁹ The study did not include verification of payment of fines imposed.

TABLE 76. SUMMARY OF COURT ACTION BY JUDGES ASSIGNED TO LICENSE COURT BETWEEN JAN. 1 AND JULY 1, 1946

| JUDGES | COURT DAY ³ | TOTAL ORDERS | PERCENT OF EACH JUDGE'S TOTAL ORDERS | | | | |
|----------------|------------------------|--------------|--------------------------------------|------------------|-----------------|-------------------|--------------|
| | | | <i>Continuances</i> | <i>Non-suits</i> | <i>Warrants</i> | <i>Discharged</i> | <i>Fines</i> |
| 1 | 3 | 92 | 51 | 25 | 11 | 5 | 8 |
| 2 | 5 | 243 | 52 | 26 | 13 | 4 | 5 |
| 3 ^a | 4 | 160 | 62 | 22 | 10 | 1½ | 4½ |
| 4 | 5 | 137 | 53 | 26 | 13 | 4 | 4 |
| 5 | 1 | 70 | 53 | 21½ | 8½ | 17 | 0 |
| 6 | 3 | 141 | 54 | 26 | 16 | 0 | 4 |
| 7 | 4 | 165 | 27 | 38 | 7 | 3 | 25 |
| Total | 25 | 1008 | | | | | |

^a Four cases referred to another judge.

tion, he started a vigorous campaign to clean up the docket of pending cases by imposing fines, ordering non-suits for compliance and granting continuances on a more selective basis. As a result of these great improvements, only 40 cases were pending on June 30, whereas at the beginning of his assignment there were 101.

At the termination of the period studied, forty-six cases were carried over. These fell into five groups: (1) currently instituted cases, (2) cases having outstanding warrants, (3) cases continued for "better owner," (4) cases continued generally, (5) "lost cases," i.e., those having misplaced files. The cases which were "continued generally" were those which had been dormant for many months, although according to the testimony there had been no abatement of the violations charged.

SUMMARY AND COMMENTS

HOUSING CONDITIONS The inadequate housing supply in Chicago before the war, the influx of workers, the increased number of families, and the deterioration of existing housing have contributed to the increase in overcrowding, especially in the blighted and sub-standard areas. This problem can be solved only by building more dwellings in the city or by the migration of part of the population to the suburbs. Present demand for additional dwelling units is estimated at one hundred thousand,³⁰ and future demand, within the next twenty to twenty-five years, at a minimum of half a million. The importance of satisfactory housing regulations in connection with so extensive a building program is clear, as well as the need to study existing regulations to determine their adequacy.

³⁰ Chicago Plan Commission estimate; much higher estimates have been made by other groups.

HOUSING REGULATIONS The building code as it relates to housing standards should establish acceptable minimum standards in lighting, heating, ventilation, structural strength, fire resistance and sanitation, and should be based on function and performance. The code should not specify the types of material and the methods of construction. The Bureau of Housing Inspection should be given the authority to determine their adequacy by performance tests. It is obviously impractical to legislate detailed specifications by ordinance when new materials and processes are being developed so constantly.

Delegation of detailed regulatory authority to the administrative agency is a reasonable procedure, which has been followed for many years by health authorities because of the technical nature of their duties. It will permit the inclusion of standards essential to healthfulness which are not considered in the existing code and will allow the adoption of new methods and materials as they are approved through scientific procedures. In addition, such a procedure removes some of the tendency, particularly noticeable in the regulation of existing housing, to freeze the standards at the level which was reasonable when the code was written. The method proposed allows prompt revision to keep pace with ascending community standards.

ADMINISTRATIVE RESPONSIBILITY Centralization of primary responsibility for enforcing all regulations is a valuable gain, as is the higher status accorded to the present bureau organization. Should this function be lodged in the health or the building department? Past achievements and present functions are pertinent in answering this question. The purpose of housing inspection is correction of violations which endanger the health or safety of the public. Inspections supply data for planning an intelligent preventive disease program. The inspectors are the "eyes" of the administrative agency through which environmental sanitation hazards are found.

Health department responsibility for housing inspection has a further advantage because of the historical development of housing sanitation standards. Health authorities have developed many of the standards accepted today as the basis for enforcing maintenance and occupancy requirements.

While housing inspection is essentially a public health function, and while the program can be better directed by one with a sound public health background and training, the effectiveness of the new bureau does depend not so much on the department in which it is

located as on its freedom to function without unnecessary hindrance. This requires that housing retain its bureau status.

The regulation of all conditions pertaining to existing housing should be the primary responsibility of the Bureau of Housing Inspection. This responsibility should include the inspection for licenses of all convalescent homes, nurseries, homes for the aged, and similar institutions. The placing of primary responsibility for the inspection and approval with this bureau would eliminate the existing conflict among inspectors on matters of overlapping jurisdiction with respect to institutions. Other city departments would continue to have concurrent responsibilities and could make inspections. This proposal, however, would require that all inspections be analyzed and approved by the director of the bureau. He would be responsible for issuing or denying the licenses.

Not only should the director of the bureau act to co-ordinate the activities pertaining to nurseries, homes for the aged, and other institutions, but he should function in close harmony with the mayor's co-ordinator and the directors of official and civic groups concerned with housing activities. For example, he should enlist the assistance of the Chicago Plan Commission in collecting and analyzing environmental data which relate to housing. He should make available to this commission and to the Chicago Housing Authority data on housing quality. In addition, he can supplement the work of his staff by co-operating with the volunteer housing agencies.

ORGANIZATION AND STAFF A reorganization of the Bureau of Housing Inspection is desirable, both to provide increased effectiveness in administration and to assure a staff capable of enforcing the existing regulations. The present organization places upon one man the responsibility for direct supervision of thirty-four inspectors, whereas there should be a supervisor of inspections for each eight to twelve inspectors.

Direction of the expanded program should be assigned to a professional public health official, preferably a public health engineer, with experience in administration and housing regulation. This person should have freedom, subject to civil service regulations, in hiring and dismissing personnel. While those who administer the bureau at present may be well-intentioned, they lack foresight and training in basic public health matters and have appeared unwilling to accept opportunities for professional improvement. The bureau has failed to recognize the full significance of primary health hazards,

it has neither developed nor followed an orderly plan for enforcing housing regulations, it has taken little part in pointing out the need for improved legislation, and it has not placed sufficient emphasis on the assignment of inspectors to duties on the basis of public health importance.

The following plan of organization is suggested for the proposed Bureau of Housing in the Chicago Health Department: a bureau director responsible to the deputy director in charge of the public health engineering branch of the health department; 45 canvass inspectors and 4 supervisors; 24 complaint inspectors, with 2 supervisors; and a clerical force of 20 plus 1 supervisor. The 45 canvass inspectors are considered the minimum number required to inspect each of the approximately 100,000 substandard dwellings in Chicago at least once every two years to determine violations of the code, obtain corrections, and bring the information on each structure up to date. This number is based on each inspector's ability to make 12 inspections each day. It is believed that 24 complaint inspectors will be sufficient if they are relieved of unnecessary record keeping and if they spend six to seven hours each day on inspections. Of the clerical force of 20 people, 6 should be assigned to records and filing; and the other 14 would transcribe the field data on cards for tabulation and analysis.

Plans for administering this bureau should include a monthly report to other municipal departments and to interested civic groups, showing the progress which has been made. A report of the type recommended by the Metropolitan Housing Council's Committee on the Enforcement of Minimum Housing Standards would be helpful in keeping others informed and gaining support for the program.

SUPERVISION AND INSERVICE TRAINING Since the Department of Buildings failed to distribute to its personnel the forms used by the Chicago-Cook County Health Survey for the collection of personnel data, specific information as to the qualifications of the personnel in this department could not be obtained. The survey revealed, however, the inspectors' lack of training, the inadequacy of supervision, the placing of emphasis on the number rather than the quality of inspections, and the heavy work load placed upon the inspectors. The need for additional training and inspection is clearly brought out. Periodic review of inspections in the field by the supervisory staff is also necessary to determine the *quality* of inspections, both as to recording and as to help given to violators by the inspectors by means

of suggestions for correcting violations and instructions in matters of environmental sanitation.

The revision of existing personnel practices will aid in increasing the effectiveness of the inspectors. This program should provide security, a reasonable salary, and opportunities for advancement. To obtain and keep qualified inspectors, two existing practices must be abolished: (1) paying plumbers two and one-half times the amount paid professional persons who perform the same duties, and (2) payment of the maximum salary after three years of service, with no further advancement possible.

An inservice training program should be planned for both the experienced and the new inspectors. A minimum of four hours each week should be devoted to training for the first four weeks. For an indefinite period following the first four weeks, two hours a week is needed for this activity. Some of the items which would be profitable in such a program are: (1) a history of Chicago's development and the growth of substandard housing areas; (2) the importance of safe, sanitary housing; (3) the legal considerations involved in enforcing housing regulations; (4) training in recognizing and measuring housing defects inimical to health, such as potential cross-connections between the water supply and the waste lines, inadequate light and ventilation, and structural dilapidation; (5) methods of correcting common code violations.

RECORDS AND FILING The staff responsible for taking telephone complaints should be qualified and allowed to make suggestions for corrections. Minor complaints can often be satisfied and the source of the complaint can be removed in this manner. Experienced inspectors will be required. It is necessary, at least for the present, to accept anonymous complaints, since these often bring to light serious hazards, and the complainant does not wish to give his name for fear of reprisal.

Some changes in the present filing system of the bureau and the installation of additional equipment would facilitate the accuracy, utility, and convenience of the files. Four separate files are proposed: (1) the housing complaint file; (2) the housing survey file; (3) the court file; (4) the license file (if license inspections must remain with the bureau).

Reorganization of the housing complaint file around a master card for recording all complaints, notices, hearings, and inspections is desirable. As many separate sheets as possible should be eliminated,

and a separate folder should be provided for each building for which a complaint is filed. Under this system "dead" material will be filed alphabetically and numerically in a separate section.

Cards which lend themselves readily to modern methods of tabulation and analysis should be used for recording the housing survey findings. These are needed to permit studies of the inspection results to guide immediate and long-range planning of housing activities. Since some court records were missing, it is recommended that the general suggestions made in subsequent paragraphs apply to these files, also.

So long as the bureau makes license inspections, the records for this activity should constitute the fourth separate file. At present these cards are filed with the housing and complaint records. All material from the file should be removed and returned only by the file clerks responsible for it. A record should be kept of all material removed and of the persons to whom it is charged.

Additional file clerks are essential, and their activities should be under the direction of a trained supervisor. The method of recording by all inspectors should be uniform, and periodic examination of the records made by each inspector is suggested.

HEARINGS Some improvements are needed in the direction, the time allotted, and the facilities for holding the hearings conducted by the Bureau of Housing Inspection. The supervisors should be trained specifically for this task, as each case presents an opportunity to correct a violation without recourse to the court. The training should include a thorough understanding of building maintenance and sanitation problems, sources of labor and materials, and the psychology of enlisting co-operation.

Failure to acknowledge a hearing notice should result in the case's being recommended for suit immediately. There appears to be scant justification for a long time lapse between the date of default and the date suit is brought to court.

As some of the judges recognize, the "compliance system" fails to result in correction of violations. Its use also leads to excessive granting of continuances and an increased load on the legal machinery. It causes the courts to duplicate the activities of the Bureau of Housing Inspection, and it contributes to a lack of respect for the law on the part of the violators.

The intent of the Chicago City Council in adopting the code was clearly to provide the enforcement agencies with power for strict dis-

ciplinary action. This intent should be recognized. The trial of cases on the basis of evidence presented to determine whether or not the defendant is guilty and the assessment of punishment on those convicted will have a salutary effect upon the enforcement of housing ordinances.

Some attempt should be made to acquaint the judges with the endeavors of the bureau to obtain a correction before the case is taken to court, and the practice of attempting compliance through continuing cases should cease. Judges should recognize that under present conditions the head of a department, suddenly castigated for a disaster such as the Hotel La Salle fire, can rightfully say that the courts, through many continuances granted to violators, have partially assumed the enforcement of the code.

The policy of rotating judges every thirty days should not be followed in the license court. A suggested minimum of six months' assignment to this court is presented for consideration in order that the judges can bring to the court continuity of action and similarity of procedure.

PROGRAM PROPOSED A survey is needed to determine the location and the extent of substandard housing, both to indicate the scope of the over-all problem and to point out those areas in which extra enforcement efforts are required. To make such a survey and to develop an effective housing program requires a trained inspection staff, competent direction, and the use of objective procedures. These procedures are best set forth in the method for measuring housing quality developed by the American Public Health Association's Committee on the Hygiene of Housing. The information supplied by the proposed survey is needed to guide the revision of regulations pertaining to existing housing, city planning and zoning, and plans for clearing the worst slum areas. An analysis of the information obtained from the survey should indicate the extent to which the existing ordinances are adequate and should point out those places in which they are lax or stringent. The development of an improved code on the basis of measurable data, carefully collected, should provide the foundation and guidance for action by the enforcement agencies. Information showing land crowding, ineffectual use of land, deficiency of parks and playgrounds, hazardous trafficways, and the mixture of commercial, industrial, and residential land uses will assist organizations concerned with planning and housing and at the same time add support to the demands for improved zoning.

Information from such a survey would point out those areas in which the majority of structures cannot be renovated economically. The attention of the existing slum clearance agencies should be directed to these areas. At present, the data on housing conditions in Chicago do not indicate those areas which can be salvaged economically through strict enforcement and those areas which are suitable only for clearance. While the seven-year-old data supplied by the Land Use Survey are helpful, they are not sufficiently sensitive to permit this definition.

It is proposed that the Chicago City Council develop an objective method of scoring housing deficiencies by means of which areas could be classified according to the degree to which they are substandard. The resulting classification would provide the council with information as to the extent of the housing problem and enable it to make plans for intelligent action. A five- to ten-year clearance program could then be undertaken in the worst areas. During this period owners of buildings in the area should not be required to make extensive structural changes which might add to the cost of property to be purchased for clearance.

As a means of determining the extent to which violations reported in substandard areas should be corrected, it is proposed that all violations be divided into three classes: (1) nuisance violations; (2) modified structural violations of vital health significance; (3) relatively nonhazardous modified structural deficiencies and extensive structural violations. During the proposed survey, nuisance violations, such as improper disposal of garbage, defective plumbing, broken windows, and rat infestation, should be corrected. Enforcement of violations in the other two classes should be postponed until the area is appraised completely. The degree of enforcement would then be determined by the type of area in which the structures under consideration were located. In an area subject to immediate clearance, highly selective enforcement of structural violations would be recommended; and in the areas to be cleared within a few years, corrections would be limited to hazardous structural violations.

NEED FOR CITY PLAN The previously proposed program for stopping the spread of blight through the improvement of existing laws, enforcement of these laws, and clearing of the most substandard areas can be aided greatly by an enlightened city plan. This plan should include: (1) the outline of an industrial pattern which would permit a minimum mixing of industry and residences; (2) proposals

for an effective transportation system which recognize the importance of railroads and their location; (3) proposals for an integrated rapid transit system which will enable persons to reach their places of employment without undue fatigue or loss of time; (4) development of a street pattern which will remove, insofar as possible, heavily traveled trafficways from residential districts; (5) recognition that residential communities must have ready access to centers for shopping, education, culture, and recreation. Once such a plan is prepared, the zoning code should be based on its provisions and enforced equally and fairly.

TAX STRUCTURE Some thoughtful attention regarding the tax structure for cleared areas is needed if these places are to be rebuilt. Particularly is this true if private enterprise is to be allowed to function to its full capabilities. Private corporations interested in redevelopment are reported to have halted additional planning until more favorable legislation is enacted by the city. This legislation should include assured protection of communities through improved methods of zoning and planning. Public housing is similarly handicapped, although it functions under slightly more favorable regulations. The part which the public will assume in the costs of redeveloping substandard areas must be determined by the proper legislative bodies. However, the public must come to grips with this problem if large-scale rebuilding is to occur.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. The Chicago City Council shall replace the existing code of standards with basic performance standards which establish the acceptable minimum in lighting, heating, ventilation, structural strength, fire resistance, and sanitation.
2. Explanatory rules and regulations shall be adopted and enforced by the administrative agencies.
3. A critical review of legislation pertaining to housing sanitation shall be made by the department responsible for enforcement of this legislation.
4. The Department of Buildings shall enforce regulations pertaining to new structures.
5. The Bureau of Housing Inspection shall be transferred to a reorganized Board of Health, or a separate department of housing be

made solely responsible for enforcement of regulations relating to existing structures. This change should be made as soon as an able director for the bureau can be obtained and given authority to carry out his responsibilities without hindrance.

6. Effective liaison between the enforcement agencies shall be provided.

7. The large number of functions assigned to the present Bureau of Housing Inspection shall be reduced by making the following changes:

(a) Limit the functions of this bureau to the investigation of complaints relating to housing, the enforcement of regulations pertaining to existing structures, and the collection and analysis of data on housing quality in substandard areas, which would serve as a basis for formulating city policy toward these areas.

(b) Transfer all other functions of the present bureau (such as inspection of industrial and other establishments for licensing) to the appropriate bureaus in the proposed reorganized health department.

8. The Bureau of Housing Inspection shall be reorganized to provide a minimum staff of sixty-nine inspectors, seven supervisors, and twenty clerical persons, with a registered engineer experienced in public health and housing regulation enforcement in charge.

9. Competent personnel shall be employed on the basis of merit and a program of inservice training and effective personnel practices shall be adopted.

10. The system of record keeping shall be revised and additional filing equipment shall be installed to facilitate accuracy, utility, and accessibility of all files.

11. The methods of accepting and processing routine complaints shall be modified so that they may be abated more rapidly.

12. The hearings held by the administrative agency shall be continued, with improvements in their direction, the time allotted, and the facilities in which they are held.

13. The court cases shall be tried on their merits and not continued for compliance, and all suits in which the violation is unabated shall be automatically returned to the city prosecutor for re-entry in court.

14. A continuing program for determining the location and extent of substandard housing shall be developed, using objective pro-

cedures and recording the information in a manner which will permit analysis of the type recommended by the American Public Health Association.

15. The data supplied by the survey suggested in recommendation "14" shall be used to guide the development of regulations, enforcement, city planning and zoning, rehabilitation, and clearance of slum areas.

16. The enforcement program shall be planned in accordance with the survey findings, with strict enforcement of all violations in areas which can be rehabilitated economically by this means and a program of clearance shall be undertaken in areas in which the majority of the buildings are not worth salvaging.

17. The code shall be amended by grouping all violations into three classes: (1) nuisance violations; (2) modified structural violations of vital health significance; (3) relatively nonhazardous modified structural deficiencies and extensive structural violations.

18. The Bureau of Housing Inspection, in co-operation with interested civic agencies, shall institute an educational program to acquaint the public with the housing sanitation problems, their effects upon all Chicago people, and the progress being made toward their solution.

19. Private and public groups interested in building housing shall be encouraged through a favorable tax structure and long-range planned program to rebuild cleared areas.

HOUSING IN COOK COUNTY

The expansion of the suburbs from Chicago outward into Cook County has followed a normal process of development. Incorporated villages and cities have gradually emerged from small unincorporated settlements, and, later, additional urban centers have grown and developed beyond these first suburbs. This process, which is continuing, has resulted in a total of 89 villages and cities (exclusive of Chicago) with an aggregate 1940 population of 606,185.

During the early period of its growth each of the suburbs expanded without the benefit of building regulations or zoning requirements. Until 1940 there were no regulations over land use or building in Cook County. The only controls known were the deed restrictions, which in some subdivisions became part of the contract between the realtor and the residents. Often these restrictions reflected the whims of the subdivider rather than the result of any professional advice.

As a consequence of the early, disorderly growth, many of the suburbs have inherited blocks of unregulated buildings erected in violation of good land-use practices.

The population in the entire county, exclusive of Chicago, increased from 605,685 in 1930 to 666,534 in 1940, a growth of 10.1 percent. The increase from 1940 to 1946 is estimated to be 16.2 percent, or an addition over 1940 of 108,000. This growth has been mainly in the rural nonfarm areas, and the greatest expansion in this category, especially from 1940 to 1946, has been in the subdivisions.

The main factors in the rural nonfarm population increase are the desire to own a home, to live in less congested areas, and to escape the higher taxes that exist in incorporated communities. The following comparison of population growth percentages in Cook County in the ten years following 1930 makes those facts apparent: population in the county as a whole increased 10.1 percent; in incorporated areas, 7.64 percent; in rural nonfarm areas, 25.8 percent; and in rural farm areas, 19.4 percent.

The lower land values and tax rates in the unincorporated communities result from the lack of community services. The home owner must supply drinking water, dispose adequately of sewage, supply fire and police protection, and live without other modern services which are provided in the city.

Two major factors which govern the location of the rural home are the owner's desire to live sufficiently near the city to enjoy some of its advantages and the necessity for living within reasonable commuting distance of his employment, which is often in the city. The location of 50 subdivisions in Cook County clearly illustrates these influences; 44 of them are in 8 townships located around the periphery of the city.

The following housing agencies in Cook County were established to promote better housing conditions for the families living outside of Chicago: the Cook County Housing Authority, the Oak Park Housing Authority, the Maywood Housing Authority, and the Cook County Zoning Bureau. The Federal Housing Administration also assists in improving standards of home construction through the regulations it imposes upon property which is financed under the insured mortgage plan.

The Cook County Housing Authority was organized in 1946 under the terms of the Illinois Housing Authorities Act. Its primary purposes are to clear slum areas and to plan, construct, and operate hous-

ing developments for low-income families. At present it is actively assisting the veterans' housing program. Its jurisdiction extends over Cook County, with the exception of Maywood and Oak Park which have local housing authorities. The activities of the Maywood and Oak Park housing authorities are similar to those of the Cook County Housing Authority, except that they are limited to their respective municipalities.

ZONING The zoning ordinance for Cook County was approved and adopted on August 20, 1940. It authorized the formation of the Cook County Zoning Bureau for the purpose of promoting the public health, safety, morals, comfort, and general welfare, conserving the values of property throughout the county and lessening and avoiding congestion in the public streets and highways.³¹ This ordinance requires permits for buildings, structures, land uses, water supply, and sewage disposal facilities. It divides the county into districts, regulates the uses permitted in such districts, and specifies minimum lot sizes, set-backs, and side yards.

Before the passage of the zoning ordinance none of the official agencies had regulations affecting housing in the county, with the possible exception of the Federal Housing Administration. This agency did much to improve and raise the standards of housing in Cook County in that it was necessary for any person who made application for an insured mortgage for the purpose of housing to comply with FHA requirements. These requirements relate to lot area, building, construction, location, water supply, and sewage disposal. They continue to supplement, to some degree, the standards of housing that the Cook County Zoning Bureau and other agencies are now enforcing in Cook County.

HOUSING QUALITY IN INCORPORATED COMMUNITIES³² Census figures for 1940 show that 89.6 percent of all dwelling units in the incorporated areas in Cook County have private bath and flush toilet as compared with 76.7 percent for Chicago. This difference is due to the greater percentage of tenements and older housing in Chicago.

In the unincorporated areas, on the other hand, only 58.2 percent have these facilities. The following factors are probably chiefly responsible for the fact that the percentage of homes with private baths and toilets is higher in the incorporated suburbs than in the unin-

³¹ Cook County Zoning Ordinance, p. 1.

³² "Incorporated," as taken from the 1940 census statistics on housing, refers only to the 44 largest towns in Cook County.

incorporated areas of Cook County: (1) homes built in the incorporated communities must meet the requirements of the building codes which have been set up in these communities; (2) in the unincorporated areas, on the other hand, there may be no code requirements, and the generally lower-income group who reside in these areas often plan homes of the "budget" and "owner-built" types, without indoor baths and toilets.

The 1940 census statistics on housing indicate that approximately 25 percent of the homes in unincorporated areas lack running water, and slightly less than one third are without indoor flush toilets. In the rural areas, excluding farms, 1.3 percent of the homes are without indoor toilet facilities of any kind. These figures indicate a need for strict enforcement of sanitary requirements.

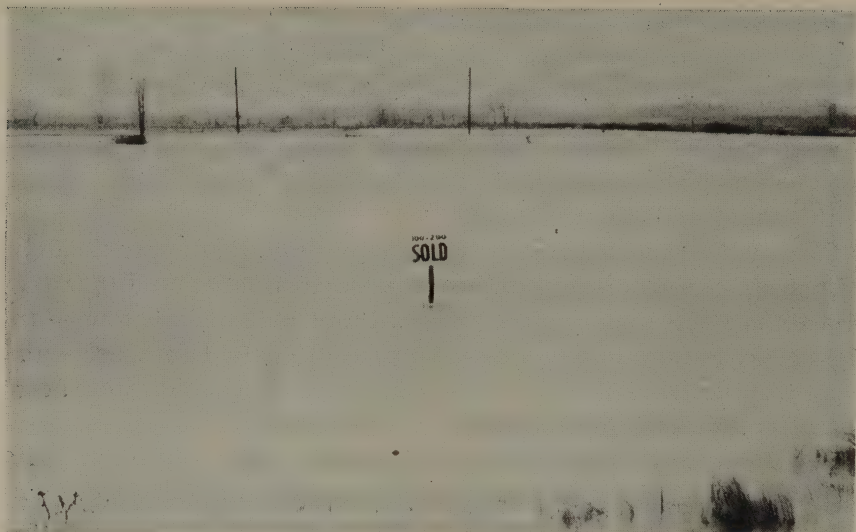
The total number of homes which needed major repairs in 1940 is 16,319; 157,175 did not need major repairs; and 7,560 were not reported. According to these figures approximately 10 percent of the dwellings in the county needed major repairs, of which 7.5 percent were in incorporated areas, 2.3 percent were in the rural nonfarm areas, and 6 percent were in the rural farm areas.

HOUSING QUALITY IN UNINCORPORATED AREAS Some major environmental factors that contribute to housing quality in unincorporated areas are the character of the neighborhood, topography, area per dwelling, water supply, and sewage disposal.

The terrain of Cook County is flat and low; it ranges in elevation from 590 to 700 feet, 10 to 120 feet above Lake Michigan. Were it not for its strategic location, this area, because of its flat marshy character, would not have been suited to the development of a great metropolitan area. The flat, ill-drained terrain of Cook County is due to the inundation of the area in past geologic ages by a vast thin sheet of water and the subsequent leveling action of a great layer of ice. Thus, the broad plain country around Chicago is a great interior basin now undergoing erosion, and many square miles of its area are without drainage courses (see the illustration on page 444).

Limestone underlies the bed of glacial drift at a depth of 150 to 200 feet in the northern part of the county and outcrops in the central west part near Lyons. The glacial drift deepens in the southern part of the county, but there are occasional areas where limestone outcroppings again occur. This limestone formation forms a great reservoir of water which supplies the individual wells of rural homes.

Large areas of rural Cook County are unsuited for subdivision de-



Courtesy of Cook County Zoning Bureau

A SUBDIVISION UNSUITABLE FOR DEVELOPMENT BECAUSE OF LACK OF
DRAINAGE



Courtesy of Cook County Zoning Bureau

POOR DRAINAGE—TYPICAL OF THE SOUTHWESTERN PART OF COOK
COUNTY

velopment because of topography and geology. In some places the ground water is subject to pollution and cannot be considered safe unless it is treated; this condition practically eliminates building until a public water system is extended to these areas. Other communities have a high ground water table. As subsurface methods of sewage disposal will not function in marshy areas, the building of homes in these places is prohibited until public sewers are available. The Cook County Zoning Bureau refuses to issue a building permit for areas known to be unsatisfactory.

Prior to 1940 there were no regulations governing the location of dwellings with regard to drainage and depth of glacial drift over limestone. Consequently, many lots which were totally unsuited for the subsurface type of individual sewage disposal system were sold for development. These lots were purchased during the dry summer months when poor drainage conditions were not apparent, and no difficulty was experienced until a period of wet weather occurred. An excellent example of this is the photograph presented on page 444, which shows a lot in a typical poor-drainage area after a rain. The individual sewage disposal system cannot function under the condition shown.

The smallest residence lot permitted in Cook County is 10,000 square feet, with a minimum width of 60 feet; however, this may vary by 25 percent if it can be proved by appeal to the Zoning Board of Appeals that the proposed variation will not (1) impair an adequate supply of light and air to adjacent property, (2) increase congestion in public streets unreasonably, (3) increase the hazard of fire, (4) endanger the public safety, (5) diminish or impair the values of property within the surrounding area, (6) or in any respect impair the public health, safety, comfort, morals, and welfare of the people.³³ An area of 10,000 square feet is about the minimum area that can accommodate a well and subsurface seepage system, and still observe the distance a well must be kept from sources of pollution to ensure the safety of the water supply.

Some additional factors which have influenced the quality, pattern, and location of housing in Cook County are transportation, the location of industrial districts, and the economic status of the home owner. A glance at a map of Cook County will show that most of the incorporated towns and subdivisions are located along suburban railroads and well-traveled arterial highways. It is true that most of

³³ Cook County Zoning Ordinance.

the inhabitants of these areas work in or near Chicago and therefore must have fast and dependable means of transportation to their places of employment.

The higher-cost type of housing, such as the "country estate" home, is usually found farthest from Chicago. This fact indicates that although fast transportation is still a factor it is not as important to the higher-income group as is the location of a home in a choice area away from industrial districts.

The "budget type" of home (i.e., the home which costs \$5,000 to \$10,000) is built by the middle-income group. Since its members are more rigidly bound by working hours, they build near enough to the city for convenience, yet sufficiently removed for some advantages of the country. Leyden Township, with its location adjacent to Chicago and nine subdivisions in its unincorporated area, is typical of this kind of development.

The "garden homesite" type attracts the low-income group and is usually some distance from any urban center. Such a development appeals to people who wish to own a plot of land large enough for a garden and possibly livestock, yet who can afford only low-priced land and a minimum for development and building. Often a garage or one-room house is built to suffice until work on the larger dwelling can be completed. In many cases the second step does not occur, and these areas become essentially rural slums. Examples of this type of development are found at Seventy-first and Harlem, Eighty-fifth and Roberts, Seventy-ninth and Cicero, One-hundred and third and Roberts, One-hundred seventh and Roberts, and One-hundred and fifty-ninth and Wolf.

Another type of housing comparable to the "garden homesite" is the owner-built home that was popular before zoning restrictions came into effect. In this type of development the owner buys a lot and erects the house as he can, or sometimes he purchases the outside shell of the house and installs the interior partitions and fixtures when expedient. Appeals were made to this income group through the installment plan which afforded homesites for as little as \$10.00 down and \$2.00 per week. A typical example of this type of development is Stone Park, now incorporated, but for years an example of poor housing in rural Cook County. Lots were sold, and shacks were built from used material, with the result that the area rapidly deteriorated into a slum district. Areas of this sort which are usually located near an incorporated community, in order to take advantage

of the organized services, can be classed as the slum district of that community. Other areas similar to Stone Park are Kedzie Heights, Wireton, and Robbins (a Negro community), all of which are outside of Blue Island.

As a direct result of the war, many "budget type" homes were constructed in communities conveniently located to large wartime industrial plants. A substantial part of this construction was in unincorporated areas. As the plants are converted to peacetime production, these communities will continue to grow. The houses were built under Federal Housing Administration regulations and were planned with adequate zoning supervision. They should continue to be an asset rather than a detriment to housing in Cook County.

ENFORCEMENT OF HOUSING REGULATIONS The state legislation known as the "Cities and Villages Act" gives to municipalities the authority to regulate building and zoning. Each municipality looks to this act for the authority to enforce the rules and regulations which it promulgates.

In order to determine the general nature of the codes of Cook County and the methods of administering them, a study was made of those which are in force in the seventeen largest incorporated communities. The people living in the towns studied comprise 73 percent of the total population in the 89 incorporated communities in the county; the population of the towns varies from 10,000 to 66,000.

Particular attention was given during the inquiry to the regulation of existing housing, because of the importance of these structures to the health of the community and the activities of the health department. It is recognized that because of the less complex and more recent nature of the majority of the suburbs they necessitate less detailed regulation than is required in Chicago. Without certain basic requirements, the difficulties of Chicago will be duplicated ultimately on a smaller scale in each of the suburbs.

In the cities studied, the enforcement of housing regulations is essentially the responsibility of the building department. Nuisances dealing with odors and the disposal of wastes are referred to the health officer, and in six communities it is his responsibility to prevent overcrowding. In only two towns does he investigate cases of faulty plumbing, while in three others he has no duties connected with housing.

The increasing complexity of building practices and regulations

has caused some cities to adopt basic ordinances which are interpreted by technically trained experts. However, there are no provisions in any of the towns studied for supplementing or interpreting the basic code by administrative rules or regulations. Seven have adopted model codes, such as those prepared by the American Standards Association, by reference. Others apparently made abstracts from these codes, but the abstracts are printed in full. Seven of the communities do not print the code for distribution. In these instances the only copy available is at the city building. This practice places both the builder and the enforcement official at a disadvantage.

Five of the cities have only "new building" codes; they do not have controls over existing housing except through the nuisance laws. In these communities such matters as overcrowding and maintenance are completely omitted from the code, as are regulations of special dwellings, such as rooming houses and quarters for transients.

The number of persons permitted to use the same single bath and toilet is one indication of the adequacy of occupancy requirements. Four of the communities have such provisions; of those which do not, several believe that other requirements are sufficiently high to eliminate the need for regulations of this nature.

The provisions of the codes which were studied indicate much dissimilarity in the amount of attention given to standards devised for the protection of health and the provision of well-being in the home. Some of the codes are concerned principally with structural items for new buildings and fail to include provisions established principally to promote livability. It is apparent that some leadership is needed to develop regulations concerning existing dwellings, particularly in regard to conditions which affect the health and welfare of the public.

NEED FOR UNIFICATION Until recently there has been no machinery for unifying the provisions of the codes in neighboring suburbs. The Suburban Building Officials' Conference, with the assistance of the Chicago Regional Plan Association, has prepared a code for governing new residential construction. Several suburbs have adopted it, and others are preparing to do so. It offers the advantages of specifying similar requirements for builders in adjacent suburbs and provides small municipalities with a complete code of high quality. Code provisions developed by building officials and other professionally qualified persons in the member communities are offered to municipalities at a small cost.

The progress made by the Suburban Building Officials' Conference in co-ordinating and improving standards for new housing is commendable. Health officials should recognize their responsibilities in the field previously outlined and take an active part, along with building officials and others, in developing adequate regulations. While they need not necessarily enforce the regulations, they should recognize their obligation for seeing that minimum standards are enforced.

The protection which these standards must give is outlined by the American Public Health Association's Sub-Committee on Housing Regulation as follows:

The adoption and enforcement of health, safety, and amenity standards for new dwellings of both single- and multi-family types, including their environment; the development and enforcement of standards of maintenance and occupancy for existing family dwellings; the treatment of peculiar problems (both as to initial character and operation) of special dwelling facilities such as lodging houses, trailer camps, hotels and dormitories; and the extension of suitable controls to the built-up areas beyond the corporate limits of the cities to preclude the development or continuance there of slums.³⁴

In preparing expanded housing regulations for the suburbs, it must be recognized that the types of housing and the problems are not the same as in the crowded city. The residential nature of many of the suburbs is in sharp contrast to the crowded tenements found in some areas of Chicago; nevertheless, the comparatively recent nature of the majority of home construction in some suburbs should not be taken as an indication that blight will never enter the community. The suburbs, on the other hand, have many points of similarity; these can be used as points of departure in developing a common code.

Housing in Robbins, Ill.—As an example of what may occur in a community which houses families with comparatively low incomes and where building controls are lacking, some data are presented on housing conditions in Robbins. This community probably presents the largest group of substandard housing in Cook County outside Chicago; yet its residents, generally speaking, desire to work out community problems and plans. It is one of those areas

³⁴ American Public Health Association, Subcommittee on Housing Regulation, "The Improvement of Housing Regulations under the Law," *American Journal of Public Health*, XXXII (1942), 1263-77.

to which public health and housing officials should devote much attention.

Robbins is a small Negro community located two and one-half miles from the city limits of Chicago and adjacent to the town of Blue Island. The 1940 census population was 1,349. In the six years following that time it has quadrupled. A co-operative study of this community was made in the spring of 1946 by the Southtown Planning Association and the University of Chicago. Of 973 residences, 510 have city water, 44 have dug or drilled wells, and 419 have no water supply on the premises. Thus, 48 percent of the residences in this incorporated community are without running water. This condition can be explained partially by the fact that there was an attempt to finance a municipal water system nearly twenty years ago which brought water to only part of the town. The water is purchased from Blue Island, and at certain times during the summer Robbins is completely without water because of the heavy draft on the Blue Island system.

Robbins has no municipal sewage disposal plant; the effluent from cesspools and septic tanks is discharged to roadside ditches. Limestone, which is less than 20 feet from the surface, makes the area unsuited for subsurface disposal. Consequently, the few wells in the area are in constant danger of pollution from septic tank effluent and the numerous privies.

Of 907 toilets in the area, 286 were of the flush type, and 621 or 68.5 percent were outdoor privies. Of the 970 buildings in the area, 203 needed major repairs or were totally unfit for use. Nearly all this number were residences.

SUMMARY AND COMMENTS ON CONDITIONS IN COOK COUNTY

The normal expansion of population from Chicago outward into Cook County has resulted in small communities and subdivisions which later were incorporated. Until the communities were incorporated, they grew without the benefit of building regulations. Neither were there zoning controls until 1940. This unregulated growth of communities has contributed to the development of substantial problems.

Some of the problems were transferred to the municipality with the incorporation of each area; others plagued these communities as hovel settlements grew just outside their corporate limits. The attraction of persons with a low income to the fringe of existing de-

velopments was inevitable, and it is logical that they should locate as close as possible to available shopping, educational, and recreational facilities.

The growth of inadequate housing outside the limits and the mixture of good and poor housing in unincorporated developments gave rise to demands for protection of existing property through zoning regulations. The zoning ordinance which was passed in 1940 required that a permit be issued for each building and established certain controls over land uses. It applied to all areas outside the corporate limits of villages and towns in the county.

Following the passage of the zoning act there was increased agitation for the enactment of building and plumbing regulations and their enforcement in the unincorporated areas. Before this legislation can be approved, it is necessary for the state to give the required authority to the county to formulate a building code. Recent sessions of the legislature have considered this matter, but so far no enabling act has been approved.

The Cook County Zoning Bureau and the Cook County Department of Public Health have co-operated in an attempt to define certain areas which are unsatisfactory for homes. These areas are fairly well known. There are, however, other areas which have not been studied. Available information about the geology and character of each area should be supplemented by whatever additional investigation is necessary to define all areas which are unsuited for development. The location of these plots should then be publicized to prevent their sale.

The county is in need of a building code, and every effort should be made to obtain the necessary authority to adopt one. It should include regulations pertaining to new building and to existing structures. Enforcement of new construction regulations can be accomplished best, it is believed, by consolidating building and zoning enforcement in a department of zoning and building. The enforcement of maintenance and occupancy standards is a health responsibility and therefore should be enforced by the Cook County Department of Public Health. This department can continue to assist the zoning authority in sanitary engineering matters, such as approving plans for water supplies and sewage disposal systems.

A review of the housing regulations of the seventeen largest suburbs shows a definite need for consolidation and co-ordination of provisions of the various building codes. In addition, there is need

for increased interest on the part of health officials in matters of housing which affect the public health. The greatest omission appears to be failure to enforce adequate maintenance and occupancy regulations; five of the cities have no provisions in their building codes which relate to conditions in existing housing.

In general, the codes do not attempt to prescribe for the full range of adverse factors which affect the health and well-being of the public. They appear to be concerned primarily with structural strength and adequacy, and they omit some of the considerations which contribute to livability and healthfulness. The enforcement methods emphasize structural matters, even in those places where the code is sufficiently broad to extend other necessary controls over existing structures. If the codes are to be made adequate from this point of view, and if the provisions are to be enforced, more interest must be shown by health officials in phases of housing which contribute to health.

Building departments have the principal responsibility for enforcing housing regulations. Some assistance is given in the larger suburbs by the fire and health departments; however, there appears to be a minimum overlapping of the activities. Nearly all the municipalities depend entirely upon complaints to reveal violations. This method does not contribute to a knowledge of the housing defects and needs which exist in substandard housing areas of the community. A program of systematic inspection should be planned by each community to fit its needs, and on the basis of the findings, an enlightened housing program can be planned.

Building officials have recognized the need for similar building requirements by the communities surrounding Chicago. Through the Suburban Building Officials' Conference of Chicago they have prepared a code for the construction of dwellings. A number of suburbs have adopted the code by reference, and others are considering similar action. This is a progressive step and should be considered by all incorporated communities in Cook County.

In addition, the code should be expanded to include provisions for the control of factors which adversely affect health. Such matters as occupancy, over-crowding, use-conversions, structural soundness, repair, provision and maintenance of sanitary fixtures, proper maintenance of utilities, heating, lighting, ventilation, lighting and cleaning of public places, storage and disposal of refuse, general sanitation, control of nuisances, specific fire hazards, control of ro-

dents and insects, and safeguards for unused structures should be considered.³⁵ Health authorities can give some valuable assistance in preparing such a code, or in revising an existing code. They should accept this as one of their responsibilities.

The protection of the public health through the enforcement of housing regulations can be further aided by a regional plan which includes all of Cook County and the adjacent communities. The Chicago Regional Plan Commission has made some progress toward this end. It should be given the necessary assistance and responsibility to hasten the task toward completion. When the plan has been prepared, the zoning code should be based on its provisions.

RECOMMENDATIONS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO)

It is recommended that:

1. All incorporated communities in Cook County shall work jointly toward the preparation and adoption of a single housing code through the Suburban Building Officials' Conference of Chicago or a similar organization.

2. The Suburban Building Officials' Conference of Chicago, in co-operation with health authorities, shall prepare a housing code governing the maintenance and occupancy of existing structures.

3. Local health authorities shall examine the existing housing regulations for each municipality to determine if they included controls over conditions in existing dwellings.

4. Cook County shall adopt a housing code to regulate the construction of new residences and the conditions in which they are maintained and occupied, and that this code shall apply in all areas in Cook County which do not enforce a housing or building code.

5. A Cook County Department of Building and Zoning shall be assigned responsibility for enforcing regulations pertaining to construction, remodeling, and zoning.

6. The Cook County Department of Public Health shall be responsible for enforcing the provisions of the building code which pertain to maintenance, occupancy, and environmental conditions and that it shall make such studies as are necessary to provide the Cook County Housing Authority with data concerning substandard housing areas.

7. A detailed survey of Cook County shall be made to determine the location and extent of all areas where the construction of dwell-

³⁵ *Ibid.*

ings is inadvisable because of geology, drainage conditions, or environment, and that such construction in these areas shall be prohibited.

8. A regional plan shall be developed for all of Cook County and that enforcement of the zoning code shall be based upon it.

Part II

PREVENTIVE
MEDICINE

PUBLIC HEALTH IN THE CHICAGO-COOK COUNTY AREA

by *Dudley A. Reekie, M.D.*, and
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THE BASIC SANITARY SERVICES upon which the healthful functioning of a great metropolitan area such as Chicago-Cook County depends so vitally have been described in Part I—"Environmental Sanitation." The chapters which comprise Part II—"Preventive Medicine"—take up in similar detail the activities of official and voluntary health agencies in the area in relation to the following phases of public health: public health statistics; control of the communicable diseases (including separate chapters on tuberculosis and the venereal diseases); mental hygiene and psychiatric care; maternal and child health service; school health services; industrial health and hygiene; public health nursing; dental health services; nutrition services; and health education.

Concluding chapters will describe existing employment practices in city and county health agencies and outline desirable personnel policies; they will discuss survey findings in regard to the organization and administration of voluntary and official health agencies (with particular emphasis laid upon the work of health departments); finally, they will review the status of health in this area and present recommendations for present and future health policy.

Basic data for study were, in general, more adequate for Chicago than for the remainder of the county, especially for the earlier years, a period which established the basic trends. Therefore, many of the comparisons in text, tables, and figures are for Chicago only. Conclusions about general trends in the area should not be affected materially, however, since most of the population and the activities have always been within Chicago.

In summarizing the findings of the Chicago-Cook County Health Survey in relation to the activities grouped under "Preventive Medicine" and in outlining the steps which should be taken in view of

the conditions revealed, especial emphasis will be placed upon the many adjustments in present policies and practices, the substantial extensions of existing services, and the development of essential new services.

Social and economic conditions, growth and distribution of the population, changes in the incidence of disease, the introduction of new methods and techniques based on modern scientific knowledge, and changes in generally recognized concepts of public health all contribute to the development of health services in a community. Past happenings often determine future trends. As a background, therefore, for the discussion of present public health activities, and as a guide toward the solution of future problems, this introductory chapter will review briefly the underlying factors which led to the initial development of health services in the Chicago-Cook County area and will present statistics relating to the growth and the distribution of population. Rates of sickness, survival, and death by age groups, defects among school children, and the relationship between environmental factors and sickness rates will also be presented.

EPIDEMICS AND THE DEVELOPMENT OF PUBLIC HEALTH SERVICES

In Chicago, as elsewhere, the beginnings of health services can be traced to the fear of pestilence. Up to a period beginning a little more than thirty years ago, in fact, this fear supplied the leading motive for almost all organized health effort. Although the great fire of 1871 destroyed Chicago's official health records, it is known that since 1832 and, indeed, down to the beginning of the present century epidemics of cholera, smallpox, typhoid fever, scarlet fever, and diphtheria ravaged the city at intervals. Two out of three of the population contracted cholera during the first outbreak of this disease in 1832. Two years later Chicago organized its first board of health. In 1849 cholera struck again and killed 1 person in every 36. In 1854 another devastating epidemic took 1,424 lives out of a population of 70,000 and the city authorized the establishment of a cholera hospital. Three years later, however, no funds were voted for health work, and, since no epidemics were raging at the time, the board of health was disbanded. Epidemics of cholera continued at intervals, but by 1873 the water supply had been improved tremendously by the replacement of the old hollow log conduits with iron water mains, and deaths from cholera had dropped to 48.

The first smallpox epidemic occurred in 1848 and killed 29 of

every 1,000 in the population. In 1864 there were 1,233 cases and 283 deaths. Smallpox exacted a frightful toll for thirty years thereafter, until, in 1894, the health authorities instituted the first general vaccination program, which included 1,084,500 people.

Typhoid fever, which is transmitted in the same way as cholera, was prominent as a cause of death in 1856. In 1890 this disease was responsible for the death of approximately 124 persons in every 100,000. The next severe outbreak was in 1902. Since then the incidence of typhoid fever and the number of deaths from it have gradually receded as sanitation has been improved.

REDUCTION IN DEATH RATES Although the first severe outbreak of scarlet fever was recorded for the year 1844, Chicago's greatest epidemic occurred in 1859, resulting in a general death rate of 272 per 100,000. A 1913 epidemic caused 10,600 cases, with 906 deaths, a death rate of 38.6 per 100,000 population as compared with the 1940-44 rate of 0.35.

The following statistics reveal the enormous toll taken by other communicable diseases during these early days and the striking reduction in both incidence and fatalities which has resulted from improved sanitation, development of public health control measures, and, of course, other factors not specifically related to public health. In 1878 deaths caused by whooping cough were at the rate of 53.8 per 100,000 of the population. The 1940-44 rate, or four-year average figure, was 0.62. Diphtheria, in 1880, caused deaths at the rate of 290.7 per 100,000, the highest on record for the city. Records show 1,216 deaths from diphtheria even as recently as 1917. By 1940-44 the rate had dropped to 1.02. The highest mortality rate in Chicago from measles occurred in 1884—50.6 per 100,000. For the 1940-44 period the rate was only 0.30. The statistics presented in this paragraph and the preceding ones, selected at random from Chicago records, show that this city, like most others, has a history of recurring epidemics, never long absent, and a lusty reservoir of infection at all times.

Earlier chapters have pointed out the difficulties which beset Chicago in the establishment of a health department. In 1860, three years after the board of health had voluntarily disbanded, the city council, by ordinance, abolished the provisions for a board of health and transferred to the street commissioner the duties previously performed by the health officer. The following year a board of police was created and charged specifically with guarding the public health

and enforcing all health ordinances passed by the city council. Soon thereafter a prominent physician called attention to dangers in the situation, saying: "I know of no City except Chicago, with a population of 110,000, that has neither a health officer, a board of health, or [*sic*] any other official sanitary organization."

CHANGING PUBLIC HEALTH CONCEPTS In 1867 a board of health was re-established. In 1876, shortly after the passage of the Illinois Cities and Villages' Act, this board was superseded by a department of health. The budget for this department was \$62,016.35, distributed as follows: scavenger work, \$17,000; removal of dead animals, \$6,375; general health work, \$36,640 (for a city of 407,661 people).

By the beginning of the twentieth century, reporting, isolation, and treatment of infectious diseases in Chicago were routine procedures. Vaccination against smallpox was the rule, not the exception. Treatment and safe distribution of water, sewage and drainage works, public cleansing, removal of nuisances, and provisions for the burial of the dead were provided for in statutes. The city's health code evolved in accordance with a complete, though gradual, change in the concept of public health. Negative solutions, implied in instinctive flight from pestilence, isolation or banishment of obvious sources of infection, and spasmodic abatement of nuisances, were replaced gradually by a positive and systematic attack on conditions that were causing the spread of disease. This positive approach became possible when, as a result of advances in medicine and sanitation, scientific methods for the control of major pestilences, and, indeed, of most communicable diseases, could be substituted for the only weapon known in earlier days—isolation—now recognized as a frail bulwark.

The organization of the Chicago Milk Commission in 1903, incorporated in 1911 as the Infant Welfare Society of Chicago, and its early activities provide another illustration of the positive approach toward the solution of health problems. Largely through the efforts of this commission the use of formaldehyde in the preservation of milk was forbidden, as was the watering of milk; tuberculous cows were removed from dairy herds; and milk was pasteurized.

The establishment of slum clearance projects, the regulation of building construction, and the assumption of responsibility by the city for the condition of streets and the development of public parks also illustrate attempts to remedy environmental conditions which might influence the spread of disease.

In general, progress toward the elimination of contagious diseases has been phenomenal, and the time may be near when the job will be done. This goal can be reached, however, only if modern methods of control are employed effectively and if those responsible for control never relax their efforts. Communicable disease control, however, is only one aspect of the broad field of preventive medicine. Many other jobs remain. Promotion of maternal and child health, school health services, mental hygiene, nutrition services, public health nursing (exclusive of bedside care), much of industrial hygiene, and health education work are other important phases of preventive medicine which have developed largely within the last thirty to thirty-five years.

Promotion of positive, vigorous health should be a major objective in all public health programs. Effective use should be made of the specific knowledge we now possess. There is no excuse for tolerating ills which may be abolished by the application of well-established principles of public health.

POPULATION CHARACTERISTICS

The general character and scope of the health program of a community should be determined largely by the needs of the persons who live in that area. People are thus the starting point of all plans for public health and medical services. Certain characteristics of the present population of Chicago and Cook County and estimations of growth and changes which may be expected in the future provide the background against which the findings of this survey must be interpreted.

GROWTH IN POPULATION In 1840 Cook County had a population of only 10,200, of whom 4,470 lived in Chicago. According to the 1940 census, Cook County's population (including Chicago) was 4,063,342 and that for Chicago alone, 3,396,808.¹ Cook County exclusive of Chicago had a 1940 population of 666,534. The rapid growth of both city and county in the decennial census years from 1840 through 1940 are shown in Table 77. For the city of Chicago, the greatest percentage increases occurred at about the middle and again near the close of the nineteenth century. The former period represents the development of Chicago as a Great Lakes and river

¹ Present evidence reveals that the population of the Chicago-Cook County area is considerably larger than the number reported in the U. S. Census for 1940. The Illinois Public Aid Commission estimates that the 1946 population of Chicago is at least 3,600,000 and might be as large as 3,800,000.

TABLE 77. POPULATION OF COOK COUNTY AND CHICAGO
(DENSITY PER SQUARE MILE FOR CHICAGO), 1840-1960^a

| YEAR | COOK COUNTY (EXCLUDING CHICAGO) | | CHICAGO | |
|------|---------------------------------|-----------------------------|---------------|-----------------------------|
| | <i>Number</i> | <i>Percentage of Change</i> | <i>Number</i> | <i>Percentage of Change</i> |
| 1840 | 5,731 | | 4,470 | |
| 1850 | 13,422 | 134.2 | 29,963 | 570.3 |
| 1860 | 35,694 | 165.9 | 109,260 | 264.6 |
| 1870 | 50,989 | 42.9 | 298,977 | 173.6 |
| 1880 | 102,339 | 100.7 | 505,185 | 69.0 |
| 1890 | 92,072 | -10.0 | 1,099,850 | 117.7 |
| 1900 | 140,160 | 52.2 | 1,698,575 | 54.4 |
| 1910 | 219,950 | 56.9 | 2,185,283 | 28.7 |
| 1920 | 351,312 | 59.7 | 2,701,705 | 23.6 |
| 1930 | 605,685 | 72.4 | 3,376,438 | 25.0 |
| 1940 | 666,534 | 10.0 | 3,396,808 | .6 |
| 1950 | ... | ... | 3,625,000 | ... |
| 1960 | 960,000 | ... | 3,750,000 | ... |

^a Statistics 1840-1940, U. S. Bureau of the Census; statistics 1950-60, Chicago Plan Commission estimates.

navigation center; the latter period, more railroad development into the west.

The slowing down of Chicago's population growth and the increase in the rate of growth in Cook County outside Chicago were pointed out in Chapter 4. The estimates of population in Chicago for 1950 and 1960 and for Cook County for the year 1960, also given in Table 77, show that, if they are correct, the population will continue to increase more rapidly in the county outside Chicago than in Chicago itself. Since the rate of population growth has a direct effect upon future planning, these estimates are significant.

Of the total population of Cook County outside Chicago, 91 percent is located in the eighty-nine municipalities discussed in connection with Cook County's water supply (see Table 13); the rural areas of the county have only 9 percent; 41 percent of the total population of Cook County, exclusive of Chicago, is concentrated in the five municipalities with populations of 25,000 and more.

DENSITY OF POPULATION The Chicago of 1840 had a population density of only 439 persons per square mile. By 1900, although the area of Chicago had increased fourfold, the population density had reached 8,963 per square mile. In 1940 the average density for Chicago alone was 15,872, and for the combined Chicago-Cook County area, 4,360. Among Chicago's seventy-five community areas (U. S. Census tracts), there is great variation in the degree of density.

Calculations indicate that in 1940 eight community areas had population densities ranging from 45,600 to 62,900 persons per square mile, while in five areas at the other end of the scale, the population densities ranged from 4,800 down to 1,600.²

Population density in a city and in particular sections of that city must be taken into consideration in making plans for a public health program, since it has a practical bearing upon the probable incidence of communicable diseases, the difficulties of providing the people with health services, and the extent and character of public health organization adaptable to any given section. Population density also should be taken into consideration in planning county health programs.

INCREASE IN NEGRO POPULATION In 1910 there were only 44,103 Negroes in Chicago. By 1940 their number had increased to 277,731, and it is estimated that in 1946 there were about 350,000. In 1910, 97.9 percent of the total population was white, 2.0 percent was Negro, and 0.1 percent belonged to other races. Negroes constituted 8.2 percent of the population in 1940, and the percentage of white persons had dropped to 91.7. During the period 1910-40 the Negro population in Chicago increased 529.7 percent, while the increase in the white population was only 45.6 percent. In Cook County outside Chicago there were nearly seven times as many Negroes in 1940 as there were in 1910, an increase from 2,524 to 16,426. The percentage of Negroes in the total population of the county, exclusive of Chicago, rose from 1.15 percent in 1910 to 2.46 in 1940. These figures are significant, since the relative proportion of Negroes to white persons in a community has a direct bearing on its health activities. It has been recognized for a long time that the health needs of the Negroes are greater than the health needs of the white population. Infant death rates and death rates from tuberculosis and syphilis, for example, are much higher among Negroes than among the white population.

CHANGES IN AGE DISTRIBUTION Table 78 indicates a tendency in Chicago and the United States toward a reduction in the percentage of population under 20 years of age. In the 30-year period

² These densities are calculated on the square miles of inhabited area in Chicago in 1939, which accounted for only 132.3 square miles of the total 214, and census population figures for 1940. The number of square miles of inhabited area for each census tract is given in the *Local Community Fact Book*, 1938, published by the Chicago Recreation Commission.

between 1910 and 1940 the decline in the percentage under 20 was from 42.0 to 34.4 for the United States and from 37.0 to 27.8 for Chicago. Chicago has fewer individuals under 20 years of age than does the United States, but also has fewer individuals over 64 years of age. The proportion of individuals between 35 and 54 years of age in Chicago is greater than in the whole United States.

TABLE 78. PERCENTAGE DISTRIBUTION OF POPULATION BY AGE GROUPS IN THE UNITED STATES AND CHICAGO, 1910-40^a

| AGE GROUPS | PERCENTAGE OF TOTAL POPULATION | | | | | | | |
|-------------|--------------------------------|------|------|------|---------|------|------|------|
| | UNITED STATES | | | | CHICAGO | | | |
| | 1940 | 1930 | 1920 | 1910 | 1940 | 1930 | 1920 | 1910 |
| Under 1 | 1.5 | 1.8 | 2.1 | 2.4 | 1.2 | 1.5 | 1.9 | 2.2 |
| Under 5 | 8.0 | 9.3 | 10.9 | 11.6 | 6.3 | 7.5 | 10.1 | 10.2 |
| 5-9 | 8.1 | 10.3 | 10.8 | 10.6 | 6.2 | 8.1 | 9.6 | 8.8 |
| 10-14 | 8.9 | 9.3 | 10.1 | 9.9 | 7.3 | 8.4 | 8.3 | 8.5 |
| 15-19 | 9.4 | 9.4 | 8.9 | 9.9 | 8.0 | 8.7 | 7.5 | 9.5 |
| Under 20 | 34.4 | 38.8 | 40.7 | 42.0 | 27.8 | 32.7 | 35.5 | 37.0 |
| 20-24 | 8.8 | 8.9 | 8.8 | 9.8 | 9.1 | 9.6 | 9.1 | 11.5 |
| 25-29 | 8.4 | 8.0 | 8.6 | 8.9 | 9.5 | 9.8 | 10.8 | 10.8 |
| 30-34 | 7.8 | 7.4 | 7.6 | 7.6 | 8.8 | 9.2 | 9.8 | 8.9 |
| 35-44 | 13.9 | 14.0 | 13.4 | 12.7 | 16.4 | 17.3 | 15.4 | 14.6 |
| 45-54 | 11.8 | 10.6 | 10.0 | 9.1 | 14.3 | 11.1 | 10.4 | 9.6 |
| 55-64 | 8.0 | 6.9 | 6.2 | 5.5 | 8.3 | 6.3 | 5.8 | 4.4 |
| 65-74 | 4.9 | 3.8 | 3.3 | 3.0 | 4.3 | 3.1 | 2.3 | 2.1 |
| 75 and over | 2.0 | 1.5 | 1.3 | 1.1 | 1.5 | 0.9 | 0.8 | 0.7 |

^a U. S. Bureau of the Census; excludes ages not reported.

DOWNWARD TREND IN BIRTH AND DEATH RATES During the past 20 years the trend in both birth and death rates in Chicago has been downward. This trend has been the important factor in reducing the percentage of population under 20 years of age. Table 79 shows the birth rates and the death rates for the United States (Registration Area) and for Chicago for the period 1930 through 1945. In general, the rates for Chicago are lower than those for the United States. Figure 6 depicts for Chicago the birth rates and death rates during the period 1900 through 1945. In Cook County, exclusive of Chicago, both birth and death rates have been higher than in Chicago.

Another factor which has influenced the change in the age distribution is immigration. For many years large numbers of persons of child-bearing age immigrated to the United States. In recent years, however, the number of immigrants has become so small that their influence upon population trends is no longer significant.

TABLE 79. BIRTH RATES AND DEATH RATES, U. S. REGISTRATION AREA AND CHICAGO, 1930-40 (EXCLUSIVE OF STILLBIRTHS)

| Year | REGISTRATION AREA ^a | | CHICAGO ^b | |
|------|--------------------------------|-------------------|----------------------|------------|
| | Birth Rate | Death Rate | Birth Rate | Death Rate |
| 1930 | 18.9 | 11.3 | 17.1 | 10.4 |
| 1931 | 18.0 | 11.1 | 15.3 | 10.8 |
| 1932 | 17.4 | 10.9 | 14.3 | 10.4 |
| 1933 | 16.6 | 10.7 | 13.4 | 10.6 |
| 1934 | 17.2 | 11.1 | 13.7 | 11.1 |
| 1935 | 16.9 | 10.9 | 14.2 | 10.8 |
| 1936 | 16.7 | 11.6 | 14.5 | 11.5 |
| 1937 | 17.1 | 11.3 | 14.9 | 11.1 |
| 1938 | 17.6 | 10.6 | 15.4 | 10.4 |
| 1939 | 17.3 | 10.6 | 14.5 | 10.6 |
| 1940 | 17.9 ^c | 10.8 ^d | 15.0 | 10.7 |
| 1941 | 18.9 ^c | 10.5 ^d | 16.9 | 10.5 |
| 1942 | 20.9 ^c | 10.4 ^d | 19.7 | 10.5 |
| 1943 | 21.5 ^c | 10.9 ^d | 20.1 | 11.4 |
| 1944 | 20.2 ^c | 10.6 ^d | 17.8 | 11.0 |
| 1945 | ... | ... | 17.8 | 11.4 |

^a U. S. Bureau of the Census.^b Chicago Health Department.^c Based on total population including armed forces overseas.^d Excluded armed forces overseas.

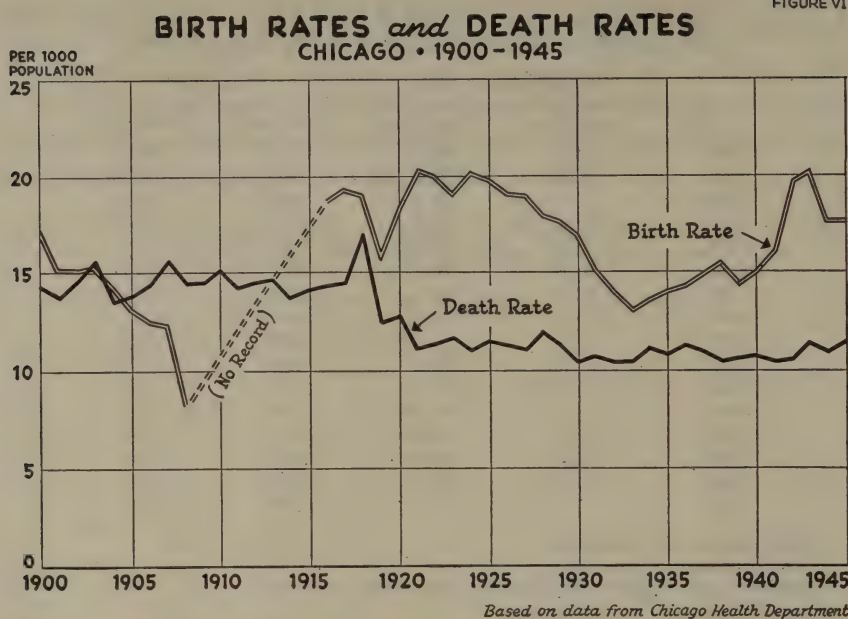
THE PUBLIC HEALTH PROBLEM AS REVEALED BY STATISTICS

This section will review health conditions in the population today as they are revealed by statistics on sickness, survival, and death, data on examinations of school children, and the relationship between death rates and environmental factors.

LENGTH OF LIFE Probably the most impressive statistics available are those which contrast loss of life at the beginning of the twentieth century with the mortality of today. Fifty years ago a great proportion of the population died before what is now called "middle age." Today the bulk of the population lives beyond middle age, and each age has gained an additional life expectancy. These are general statements which can be shown more specifically by figures on life expectancy after birth or after a given age. For example, under the mortality conditions of 50 years ago, approximately 75 percent of the newborn would live to be 25 years of age. Under present mortality conditions 75 percent of a newborn group will live until the age of approximately 57. The great increases in life expectancy occurred through the saving of the lives of infants, but important improvements were made throughout the life span.

DEATH RATES AND IMPORTANT CAUSES OF DEATHS Turning

FIGURE VI



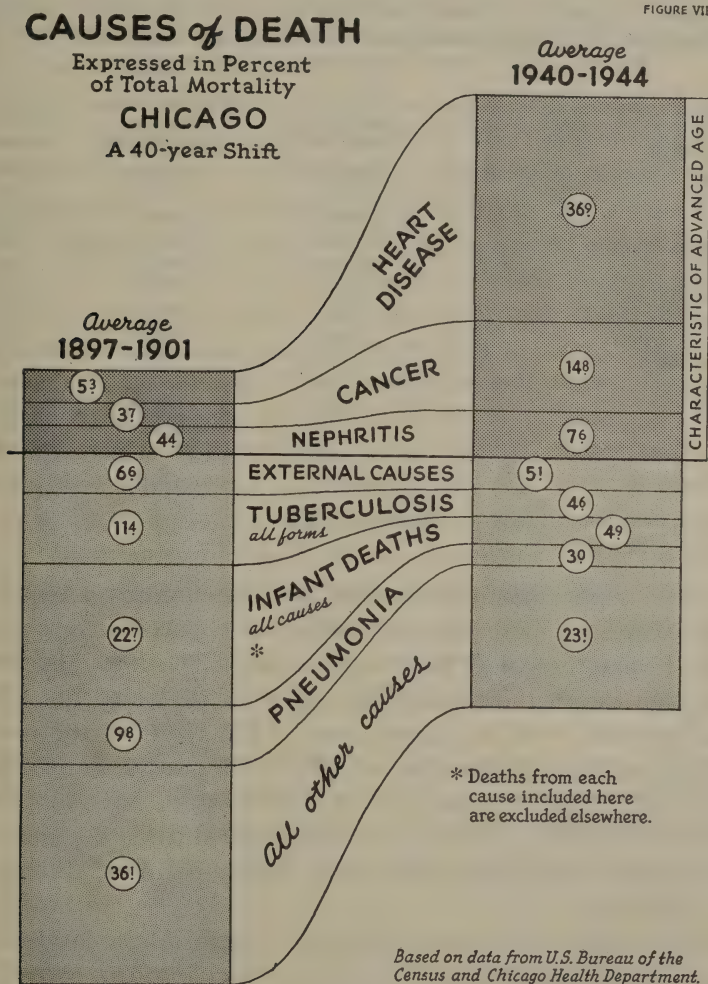
from the possibilities for survival to a more specific analysis of death rates, it is found that if the Chicago death rates about the year 1900³ were applied to the same age groups in the 1940 population, the total number of deaths would be 55,375. Actually, the average annual number of deaths occurring during the period 1940-44 was only 36,569. The difference between these totals (18,806) represents the "saving of life" as a result of the decrease in mortality.

The term "saving of life" has been placed in quotes because strictly speaking it should be termed more appropriately the lengthening of the average life span. No life can be "saved," but only made longer. The general and marked reduction in deaths due to contagious diseases and the great increase in deaths from heart disease, cancer, and nephritis have changed the whole public health picture. The sustained control of the communicable diseases has been responsible to some extent for the rise in the number of deaths in these other categories, since persons who in former times would have died at an early age from acute contagious diseases are being saved from these hazards and permitted to reach the ages where the so-called

³ Rates computed on 1897-1901 deaths and 1940 population.

degenerative diseases (such as heart disease⁴ and cancer) take a heavy toll.

Table 80 and Figure 7 bring out this point very clearly. Today the average number of typhoid deaths is only two tenths of 1 percent of what it would have been had the average rates of 1897-1901 persisted. No smallpox was reported during 1940-44. The actual average



⁴ The term "heart disease" is used to describe an accumulation of factors responsible for illness and death, which range from hereditary defects to a multitude of chronic illnesses. Its common use as a general term for many health complications reflects our inability to cope with numerous conditions contributing to death from heart failure.

number of deaths which occurred during the present period from diphtheria-croup was only about 4 percent of the number which would have occurred had conditions been exactly as they were in the period 1897-1901. The table shows that deaths from most other communicable diseases today are only a small fraction of what they would have been had the 1897-1901 rates prevailed.

TABLE 80. ANNUAL NUMBER OF DEATHS^a FROM SELECTED CAUSES, CHICAGO 1940-44, COMPARED WITH AVERAGE EXPECTED ON BASIS OF 1897-1901 AGE-SPECIFIC DEATH RATE

| <i>Causes</i> | <i>Actual Average (1940-44)</i> | <i>Hypothetical Average (Based on 1897-1901 rate)</i> | <i>Indices of Change</i> |
|-------------------------------------|-------------------------------------|---|------------------------------|
| Circulatory system (heart diseases) | 13,893.2 ^b | 5,816.1 | 238.9 |
| Cancer | 5,409.4 | 3,152.3 | 171.6 |
| Violence | 2,440.2 | 3,739.8 | 65.5 |
| Tuberculosis, all forms | 1,701.0 | 6,367.8 | 26.7 |
| Pneumonia | 1,321.0 | 6,799.5 | 19.4 |
| Puerperal septicemia | 111.0 | 238.9 | 46.5 |
| Dysentery—diarrhea | 47.4 | 927.5 | 5.1 |
| Diphtheria—croup | 34.8 | 880.8 | 4.0 |
| Whooping cough | 21.0 | 203.9 | 10.3 |
| Scarlet fever | 12.0 | 250.0 | 4.8 |
| Measles | 10.2 | 161.0 | 6.3 |
| Typhoid | 2.2 | 968.2 | 0.2 |
| Smallpox | 0.0 | 5.5 | 0.0 |
| All causes | 36,567.0 ^b | 55,375.4 | 66.0 |

^a Based on data from Chicago Health Department.

^b Excludes ages unknown, 2.0.

Puerperal septicemia, tuberculosis, and pneumonia are the significant exceptions. The rate for puerperal septicemia is still 46.5 percent of what it would have been under 1897-1901 conditions. The average number of deaths during 1940-44 from tuberculosis was 26.7 percent, and for pneumonia 19.4 percent of the average number expected on the basis of the 1897-1901 rates. If known methods of control of tuberculosis were put into effect, however, a very substantial reduction could be accomplished during the next five years compared with the 8,505 deaths which occurred during the 1940-44 period.⁵

Even pneumonia and tuberculosis are responsible today for relatively few deaths as compared with the number resulting from heart disease and cancer, which now cause 52 percent of all deaths. During the 1940-44 period heart disease killed 67,508 persons in Chicago, and cancer killed 27,047. Heart disease, in fact, is now responsible

⁵ See Chapter 26 for detailed discussion of tuberculosis.

for more deaths per year per 100,000 persons in Chicago than was almost any one of the so-called epidemic diseases on a year-by-year basis. Chicago averaged 397.5 deaths from heart disease per year per 100,000 population during the period 1940-44. Yet smallpox, when most prevalent, killed only 230.7 per 100,000, and scarlet fever at its worst in 1859 killed only 272.0 per 100,000. Dysentery, which in 1857 killed 530.8 per 100,000 is the only exception. The combined effect of these diseases was, of course, terrible; but not one of them was responsible for such a consistently high death rate as that found for heart disease today.

Deaths from heart disease are, however, by no means confined to the aged. During the period 1940-44, it was the principal cause of death among persons twenty-five through forty-four years of age, and was responsible for 24.4 percent of all deaths in this age group. Even in the age groups 5-14 and 15-24 years it ranked second, exceeded only by accidents in the 5-14 group and tuberculosis in the 15-24 group. It is obviously not a condition confined to old age, but an important problem throughout almost the entire life span.

Ample evidence indicates that heart disease is not wholly a product of the modern age, but was as prevalent in the past, although reported much less frequently as a cause of death. Among many factors responsible for more exact reporting today are: (1) improvement in the techniques for diagnosis; (2) greater care in the filling out of death certificates and in their proper classification, and a consequent reduction in the proportion of deaths formerly ascribed to "other causes," "natural causes," "unknown," and similar nonspecific conditions; (3) many changes in the international list of the causes of death and the primary causes of death which shifted the emphasis from one cause to another.

Cancer, second to heart disease in its destruction of human life, is responsible for 15 percent of all deaths in the city of Chicago. During the five-year period 1940-44 it caused 27,547 deaths in Chicago, or an average of 5,409 each year. Like heart disease, cancer is not peculiar to this era, but has been revealed increasingly by modern diagnostic techniques. In fact, certain types of cancer that could be diagnosed readily in the past are now on the decline as causes of death.⁶ The types difficult to diagnose until recently are those that have increased the number of deaths reported. Early recognition and

⁶ Louis I. Dublin and Alfred J. Lotka, *Twenty-Five Years of Health Progress*. New York, Metropolitan Life Insurance Company, 1937, p. 182.

treatment of the individual case is imperative if the disease is to be conquered. Death rates for heart disease and cancer by age groups are shown in Table 81.

TABLE 81. AVERAGE ANNUAL AGE-SPECIFIC DEATH RATES PER 100,000 POPULATION FOR HEART DISEASE AND CANCER, CHICAGO, 1940-44^a

| Age Groups | Heart Disease | Cancer |
|------------|---------------|---------|
| Under 1 | 6.4 | 2.9 |
| 1-4 | 3.7 | 8.6 |
| 5-14 | 10.5 | 4.5 |
| 15-24 | 21.7 | 5.7 |
| 25-44 | 93.7 | 46.2 |
| 45-64 | 682.7 | 338.1 |
| 65-over | 3,531.9 | 1,111.8 |

^a Based on data from the Chicago Health Department.

TABLE 82. AVERAGE ANNUAL NUMBER OF DEATHS AND AVERAGE DEATH RATES PER 100,000 POPULATION BY PLACE OF RESIDENCE IN CHICAGO AND COOK COUNTY, 1941-44^a

| CAUSES | COOK COUNTY (INCLUDING CHICAGO) | | CHICAGO | | COOK COUNTY (EXCLUDING CHICAGO) | |
|-------------------------------------|---------------------------------------|----------|----------|----------|---------------------------------------|----------|
| | Average | Rate | Average | Rate | Average | Rate |
| Heart disease | 16,436.0 | 404.49 | 13,976.5 | 411.46 | 2,459.5 | 369.00 |
| Cancer | 6,472.5 | 159.29 | 5,502.7 | 162.00 | 969.7 | 145.48 |
| Nephritis | 3,218.3 | 79.20 | 2,748.3 | 80.91 | 470.0 | 70.51 |
| Cerebral hemorrhage | 2,811.7 | 69.20 | 2,304.3 | 67.84 | 507.5 | 76.14 |
| Accidents | 2,386.7 | 58.74 | 2,022.3 | 59.53 | 364.5 | 54.69 |
| Tuberculosis (all forms) | 2,155.0 | 53.03 | 1,913.7 | 56.34 | 241.3 | 36.20 |
| Pneumonia | 1,581.0 | 38.91 | 1,368.5 | 40.29 | 212.5 | 31.88 |
| Diabetes mellitus | 1,377.0 | 33.89 | 1,170.7 | 34.46 | 206.3 | 30.95 |
| Cirrhosis of the liver | 554.0 | 13.63 | 491.3 | 14.46 | 62.7 | 9.41 |
| Suicide | 419.7 | 10.33 | 352.3 | 10.37 | 67.5 | 10.13 |
| Hernia, intestinal ob- struction | 399.0 | 9.82 | 333.7 | 9.82 | 65.3 | 9.80 |
| Stomach or duodenal ulcers | 341.7 | 8.41 | 295.5 | 8.70 | 46.3 | 6.95 |
| Syphilis | 314.5 | 7.74 | 232.3 | 6.84 | 82.3 | 12.35 |
| Prostate, diseases of | 268.3 | 6.60 | 224.7 | 6.61 | 43.5 | 6.53 |
| Appendicitis | 277.5 | 6.83 | 237.0 | 6.98 | 40.5 | 6.08 |
| Influenza | 112.7 | 2.77 | 88.5 | 2.61 | 24.3 | 3.65 |
| Meningitis | 66.7 | 1.64 | 62.0 | 1.83 | 4.7 | 0.71 |
| Diarrhea (under two years) | 47.7 | 1.17 | 37.3 | 1.10 | 10.5 | 1.57 |
| Rheumatic fever (acute) | 45.5 | 1.12 | 39.3 | 1.16 | 6.3 | 0.95 |
| Poliomyelitis | 37.7 | 0.93 | 29.3 | 0.86 | 8.5 | 1.27 |
| Diphtheria | 33.7 | 0.83 | 33.3 | 0.98 | 0.5 | 0.07 |
| Whooping cough | 27.3 | 0.67 | 24.0 | 0.71 | 3.3 | 0.49 |
| Measles | 16.0 | 0.39 | 12.7 | 0.37 | 3.3 | 0.49 |
| Scarlet fever | 10.5 | 0.26 | 9.0 | 0.26 | 1.5 | 0.23 |
| All causes | 44,568.0 | 1,096.83 | 37,693.7 | 1,109.68 | 6,874.3 | 1,031.35 |

^a Based on data from *Review of Illinois Health Statistics 1941-1944*, Illinois Department of Public Health, Springfield, Illinois.

Nephritis is the third chief cause of death of all ages; cerebral hemorrhage ranks fourth, and accidents fifth. During the five-year period 1940-44, deaths from nephritis totaled 13,817, or 7.6 percent of all deaths; deaths from cerebral hemorrhage, 9,701, or 5.3 percent; deaths from accidents, 9,208, or 5.0 percent. Table 82 shows the

FIGURE VIII

PRINCIPAL CAUSES OF DEATH BY AGE GROUPS, EXPRESSED AS THE PERCENT OF TOTAL DEATHS IN EACH AGE GROUP*
CHICAGO, AVERAGE 1940-1944

| AGE GROUPS | PREMATURE BIRTH | CONGENITAL MALFORMATION | BIRTH INJURY | PNEUMONIA | ACCIDENTS | TUBERCULOSIS | HEART DISEASE | CANCER | NEPHRITIS | CEREBRAL HEMORRHAGE |
|------------|-----------------|-------------------------|--------------|-----------|-----------|--------------|---------------|--------|-----------|---------------------|
| 65-OVER | | | | | | | 46.7% | | | |
| 45-64 | | | | | | | 38.6% | | | |
| 25-44 | | | | | | | 24.4% | | | |
| 15-24 | | | | | | 30.9% | | | | |
| 5-14 | | | | | 22.0% | | | | | |
| 1-4 | | | | 18.3% | | | | | | |
| UNDER 1 | 31.1% | | | | | | | | | |

*Excludes percentages below two, for these causes

Based on data from Chicago Health Department

principal causes of death, the average annual number of deaths, and the average death rates per 100,000 for residents of the Chicago-Cook County area during the four-year period 1941-44.⁷

DEATH RATES AND CAUSES OF DEATH AT VARIOUS AGES The following classification is almost universally accepted in presenting vital statistics according to age groups: under 1, 1-4, 5-14, 15-24, 25-44, 45-64, and 65 and over.⁸ These groups most nearly corre-

⁷ The figures in this table differ slightly from those presented in Table 80 because they are based on a different and shorter time period.

⁸ Different age groupings are used in Tables 78, 84, and 85. Unfortunately, mortality statistics for Chicago throughout the fifty-year period selected as desirable were not available by the classification now in general use. The only groups on which comparable data are available are under one and one to four years of age. Therefore, in discussing groups over four years of age emphasis will be placed on current data, and historical reference will be general and will apply to age groups that are only approximately comparable.

All rates based on population are, of course, subject to error to the extent that the population for the year of the death rate quoted deviates from the nearest census year.

spond to the physical changes of man. Each group has its health problems, which are reflected in the differences in death rates and principal causes of death for each age period (see Figure 8). Table 83 brings out these differences vividly by ranking the six principal causes of death in each age group and in all age groups combined according to the percentage of the total average annual deaths which each type has caused. The sharp rise in deaths from heart disease and cancer after adulthood is reached, which Table 81 presents so vividly, comes out with equal clearness in Table 83.

TABLE 83. PRINCIPAL CAUSES OF DEATH AS PERCENTAGE OF TOTAL AVERAGE ANNUAL DEATHS IN EACH AGE GROUP, 1940-44^a

| Age Groups | | Percentage of Total Average Annual Deaths from Specified Causes | | | | |
|------------|------------------------|---|------------------------|-------------------------|-------------------------|------------------------|
| | Heart disease | Cancer | Nephritis | Cerebral hemorrhage | Accidents | Tuberculosis All forms |
| All ages | 36.92 | 14.79 | 7.56 | 5.31 | 5.04 | 4.65 |
| Under 1 | Premature birth | Congenital malformation | Injuries at birth | Pneumonia | Asphyxia & atelec-tasis | Accidents |
| | 31.07 | 17.62 | 14.74 | 12.09 | 5.60 | 2.67 |
| 1-4 | Pneumonia | Accidents | Tuberculosis All forms | Congenital malformation | Appendicitis | Cancer |
| | 18.27 | 15.34 | 11.13 | 6.16 | 4.00 | 3.80 |
| 5-14 | Accidents | Heart disease | Tuberculosis All forms | Appendicitis | Cancer | Pneumonia |
| | 21.95 | 10.86 | 8.41 | 6.73 | 4.68 | 3.95 |
| 15-24 | Tuberculosis All forms | Heart disease | Accidents | Homicide | Nephritis | Cancer |
| | 30.85 | 13.96 | 12.37 | 4.43 | 3.78 | 3.63 |
| 25-44 | Heart disease | Tuberculosis All forms | Cancer | Accidents | Nephritis | Pneumonia |
| | 24.37 | 15.64 | 12.01 | 7.77 | 5.39 | 4.66 |
| 45-64 | Heart disease | Cancer | Nephritis | Cerebral hemorrhage | Accidents | Diabetes |
| | 38.57 | 19.10 | 6.48 | 5.69 | 4.52 | 3.77 |
| 65-over | Heart disease | Cancer | Nephritis | Cerebral hemorrhage | Diabetes | Accidents |
| | 46.70 | 14.70 | 10.62 | 6.96 | 3.95 | 3.74 |

^a Basic data from Chicago Health Department.

Also, data for the earlier periods were not consistently available for the most appropriate years, and therefore periods were selected according to the best available data rather than according to the period that was the most desirable statistically. Nevertheless, the data are sufficiently valid to indicate trends and to make general comparisons.

TABLE 84. PERCENTAGE DISTRIBUTION OF DEATHS ALL CAUSES BY AGE GROUPS, CHICAGO, 1895-1944^a

| Age Groups | 1895 | 1905 | 1915 | 1925 | 1935 | 1944 |
|-------------|--------|--------|--------|--------|--------|-------------------|
| Under 1 | 28.15 | 21.43 | 17.78 | 12.99 | 5.60 | 5.22 ^b |
| 1-4 | 15.01 | 9.85 | 7.38 | 4.91 | 2.26 | 1.04 |
| 5-9 | 3.98 | 2.47 | 2.32 | 2.21 | 1.61 | 0.55 |
| 10-19 | 4.03 | 4.51 | 3.84 | 3.49 | 2.71 | 1.36 |
| 20-29 | 9.36 | 9.36 | 9.53 | 7.28 | 5.31 | 2.66 |
| 30-39 | 10.24 | 11.08 | 10.34 | 9.97 | 7.89 | 5.36 |
| 40-49 | 8.17 | 11.54 | 11.86 | 12.26 | 13.96 | 10.59 |
| 50-59 | 7.10 | 10.20 | 12.94 | 14.82 | 17.84 | 19.97 |
| 60-69 | 6.94 | 9.50 | 11.33 | 15.91 | 20.07 | 22.93 |
| 70 and over | 7.02 | 10.06 | 12.68 | 16.16 | 22.75 | 30.32 |
| All Ages | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

^a Based on data from Chicago Health Department reports for year specified.

^b Includes 120 deaths not properly distributed by age, originally reported as "under one."

Table 84 shows the changes in the percentage distribution of deaths from all causes in the various age groups during the last fifty years. Table 85 gives rates by specified ages for this same time period, together with indices of change when the 1895 rate is used as the base period.

Under one year of age.—Figure 9 presents graphically the downward trend in the infant mortality rate in Chicago since 1925. The principal decline has occurred in the rates for infants from one through twelve months, the period in which babies formerly suffered severely from epidemic diseases. The rate for infants under one day has declined least, because the chief causes of death during the first day are now essentially what they were in 1925—premature birth, congenital malformation, and birth injury, all conditions which have been influenced least by public health measures.

Figure 10 shows the mortality rates per 1,000 live births for infants at various ages under one year in Chicago and under one year in the registration states for the last twenty years. In 1925, for each 1,000 births, 72.9 babies died. In 1944, 30.1 died, or a reduction of 58.7 percent since 1925. The 1925 rate for infants under one day was 14.3; in 1944 it was 10.6, or a 25.9 percent reduction.

Compared with the United States Registration Area, Chicago has consistently low infant death rates. Big cities in general have lower rates than states, but data were not compiled to show these differences. However, in 1940 Chicago had an infant mortality rate of 28.8 per 1,000, while the rate for the Registration Area was 47.0.

TABLE 85. AGE-SPECIFIC DEATH RATES PER 1,000 POPULATION FOR ALL CAUSES, AND INDICES OF CHANGE,
CHICAGO, 1895-1944^a

| AGE GROUPS | RATES | | | | | | | | | | INDICES OF CHANGE USING 1895 AS EQUAL TO 100 | | | | |
|---------------|--------|--------|--------|-------|-------|--------------------|------|--------|--------|--------|--|--------------------|--|--|--|
| | 1895 | 1905 | 1915 | 1925 | 1935 | 1944 | 1895 | 1905 | 1915 | 1925 | 1935 | 1944 | | | |
| Under 1 | 173.13 | 118.82 | 121.30 | 89.04 | 48.44 | 46.63 ^b | 100 | 68.63 | 70.06 | 51.43 | 27.98 | 26.93 ^b | | | |
| 1-4 | 24.08 | 15.35 | 11.64 | 8.20 | 4.66 | 2.20 | 100 | 63.74 | 48.33 | 34.05 | 19.35 | 9.14 | | | |
| 5-9 | 5.14 | 3.51 | 3.14 | 2.76 | 2.71 | 0.96 | 100 | 68.29 | 61.09 | 53.70 | 52.72 | 18.68 | | | |
| 10-19 | 3.17 | 3.11 | 3.16 | 2.08 | 1.85 | 0.96 | 100 | 98.10 | 99.68 | 65.61 | 58.36 | 30.28 | | | |
| 20-29 | 6.65 | 5.22 | 6.18 | 3.82 | 2.98 | 1.54 | 100 | 78.50 | 92.93 | 57.44 | 44.81 | 23.16 | | | |
| 30-39 | 8.04 | 8.21 | 7.22 | 5.45 | 4.77 | 3.35 | 100 | 102.11 | 89.80 | 67.79 | 59.33 | 41.67 | | | |
| 40-49 | 10.57 | 11.87 | 12.36 | 8.80 | 9.25 | 7.26 | 100 | 112.30 | 116.93 | 83.25 | 87.51 | 68.68 | | | |
| 50-59 | 17.13 | 18.92 | 20.83 | 18.22 | 16.30 | 18.86 | 100 | 110.45 | 121.60 | 106.36 | 95.15 | 110.10 | | | |
| 60-69 | 34.20 | 37.40 | 37.50 | 34.60 | 34.40 | 40.60 | 100 | 109.36 | 109.65 | 101.17 | 100.58 | 118.71 | | | |
| 70 and over | 76.00 | 83.80 | 94.90 | 79.80 | 73.50 | 101.30 | 100 | 110.26 | 124.87 | 105.00 | 96.71 | 133.29 | | | |

^a Rates based on U. S. Bureau of Census population data as follows: 1895 on 1900; 1905 on 1910; 1915 on 1920; 1925 on 1930; 1935 and 1944 on 1940.

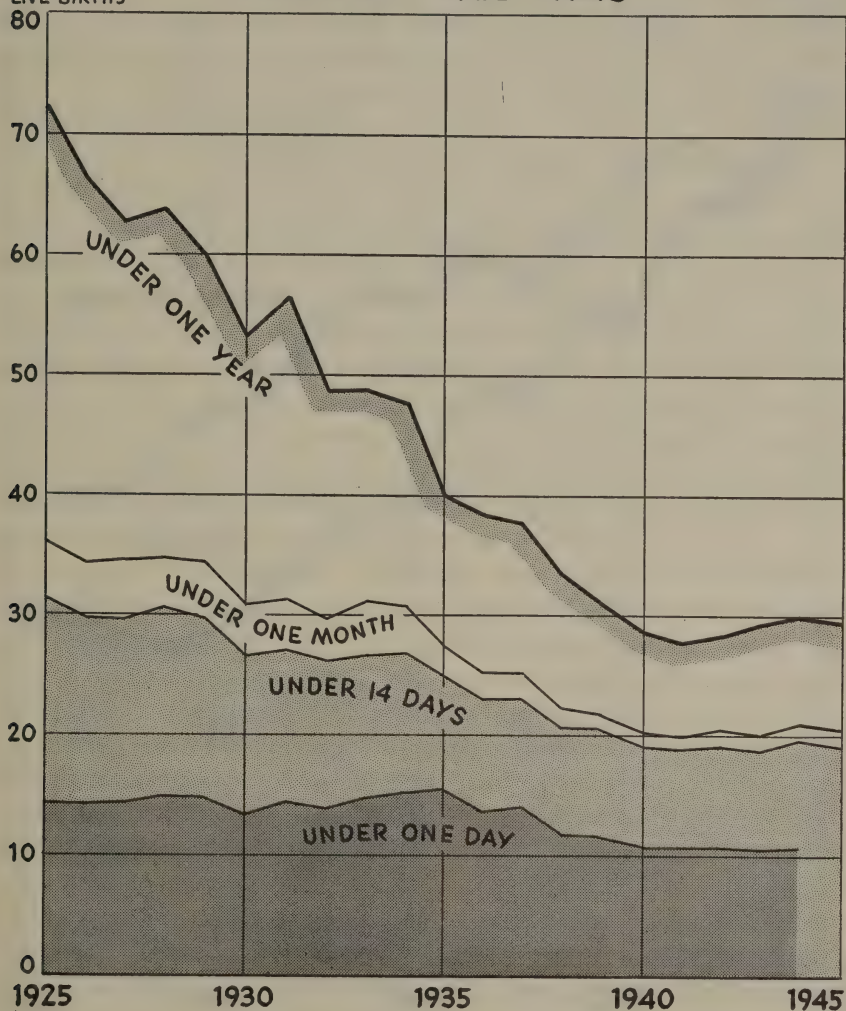
^b Includes 120 deaths not properly distributed by age, originally reported as "under one."

FIGURE IX

DEATH RATES for INFANTS under One Year Distributed According to Age at Time of Death

PER 1000
LIVE BIRTHS

CHICAGO • 1925 - 1945



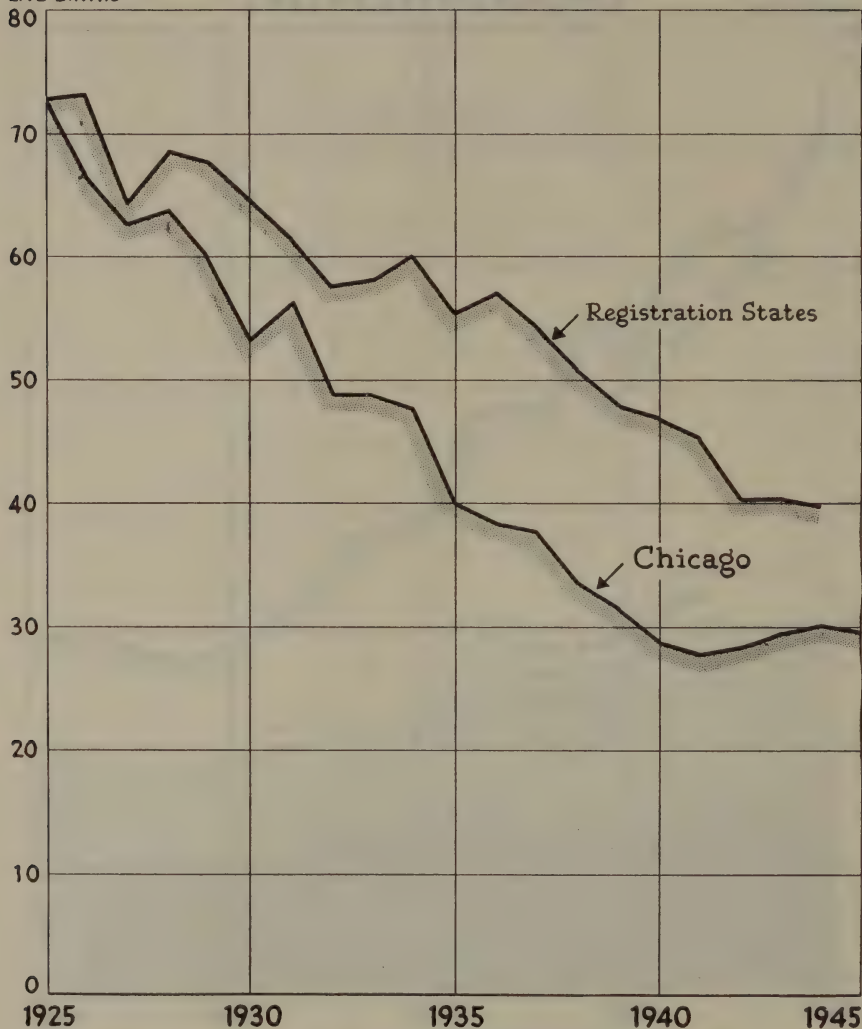
Based on data from the Chicago Health Department

With the decline in the infant death rate, a similar change occurred in the ratio of infant deaths to all deaths. In 1895 infant deaths were 28.2 percent of all deaths; in 1944, only 5.2 percent.

Ages one through four.—The great accomplishments in the field of infant welfare in the last fifty years are strikingly brought out by

DEATH RATES for INFANTS under One Year CHICAGO and REGISTRATION STATES 1925-1945

PER 1000
LIVE BIRTHS



Based on data from U.S. Bureau of the Census and Chicago Health Department

the reduction in the infant death rate from 24.1 per 1,000 in 1895 to 2.2 for the 1940-44 period, less than one tenth the earlier rate. In 1895, 15.0 percent of all deaths were in this age group; during the 1940-44 period, on the other hand, the 389.9 average deaths per year in the 1-4 age group were only 1.0 percent of all deaths.

Deaths from pneumonia during this age period also have been reduced strikingly, from an average rate of 363.9 per 100,000 during the period 1897-1901 to 41.4 for the 1940-44 period. Pneumonia still, however, ranks first as a principal cause of death in this age period. The three other causes which, with pneumonia, caused half the deaths in this group during the 1940-44 period are: accidents (34.7 per 100,000); tuberculosis (25.2 per 100,000); congenital malformations (13.9 per 100,000).

Ages five through fourteen.—Throughout the years, death rates in this age group have been consistently lower than in other groups. In the period 1940-44 the rate was 1.0 per 1,000. The communicable diseases which caused most of the deaths during the 1897-1901 period are now of rather minor importance, with the exception of tuberculosis, from which, on the average, there were thirty-seven deaths per year in this age group. Accidents ranked first as a cause of death, 22.0 percent. Heart diseases came second (11 percent) and all forms of tuberculosis, third (8 percent). The higher percentage of accidents in this age group is due to the relatively few deaths from all causes. Accident rates are higher in all ages above this group but other causes are responsible for a greater proportion of deaths.

Ages 15 through 24.—The death rate from all causes for the 1940-44 period was low in this group also, 1.56 per 1,000. Forty-five percent of the deaths were caused by two types of disease which constitute major health problems today: tuberculosis (31 percent) and heart disease (14 percent). The average tuberculosis death rate for the period was 48.0. For heart disease the rate was 21.7. While tuberculosis ranks first as a cause of death in this age group, higher rates are found in the twenty-five to forty-four and forty-five to sixty-four age groups. In these groups, however, death rates from other causes are even higher.

Ages 25 through 44.—The death rate in this age group, which comprises approximately one third of Chicago's population, is 3.85 per 1,000. About one third of all deaths (30.4 percent) occur in this age group. Sixty-five percent of the deaths are due to five of the so-called "principal causes" in the United States today. These causes, ranked according to the percent of total deaths in the group, are heart disease (24.4 percent), tuberculosis (15.6 percent), cancer (12.0 percent), accidents (7.8 percent), and nephritis (5.4 percent).

Ages 45 through 64.—The 1940-44 average death rate for this age group is 17.70 per 1,000. Two causes are principally responsible

for deaths in this group: heart disease (38.6 percent of all deaths) and cancer (19.1 percent of all deaths). In 1940 there were 769,148 persons in this age group, or 22.6 percent of the total population of Chicago. During that year 7,415 persons, or almost 1 percent of the people in this age group, died either of heart disease or of cancer.

Ages 65 and Over.—More than 70 percent of all deaths in this, the oldest age group, are caused by heart disease (46.7 percent), cancer (14.7 percent), and nephritis (10.6 percent). The death rates for all causes for persons sixty-five and over has declined slightly, however, during the past fifty years, an indication that even the aged enjoy a longer average life span today.

MATERNAL DEATHS During the period 1941–45 the average maternal death rate for Chicago was 1.8 per 1,000 live births. For the period 1925–29 the rate was 5.4. Without exception, the rates for Chicago are lower than for the United States and have declined steadily to the 1945 rate of 1.6 deaths per 1,000 live births.

STATISTICS ON HEALTH OF SCHOOL CHILDREN Although a law of 1943 requires that “as soon as practicable” after entrance all children in the public schools shall be examined and not less than every fourth year thereafter, no records were available of periodic and systematic examinations of school children in Chicago. While it is reported that private physicians examine 10,000 children from the public schools each year preparatory to their engaging in athletic contests, a written report of results was not required of these physicians, and no records were obtainable.

Parochial schools, in some isolated instances, make arrangements with private physicians for the examination of pupils. If systematic records of the results of these examinations are kept, however, their existence was not made known to the Chicago-Cook County Health Survey staff.

Some schools or health departments in the county outside Chicago keep records of periodic physical examinations which reveal “defects” or “below-par” conditions discovered during these examinations. The standards used, however, vary with the examining physicians who appraise the state of nutrition, anemia, and the condition of tonsils and adenoids in children. A summary of this kind of statistical data is insignificantly small in relation to the area of Cook County, so that it is impossible to discuss or come to conclusions about the state of health among school children in the county.

Among the records that do exist for school children, such as those kept by the private or the parochial schools of Evanston and Oak Park and by schools in the communities in which the Cook County Department of Public Health provides a school health service, the ailments and defects found are principally dental decay, enlarged tonsils, defects of vision, enlarged lymphatic glands, and skin diseases.

A special survey by pediatricians, covering 8,000 children, indicated that 60 percent of the children examined were in need of remedial medical care.⁹ Forty-five percent were bow-legged or had poor posture, 25 percent had flabby muscles and deficient fatty tissue, and 20 percent were anemic.

DEATH RATES AND ENVIRONMENTAL FACTORS The relationship of environmental factors such as housing, sanitation, and population density to death rates was discussed in Chapter 22. It was pointed out also that poor housing has a direct effect on morbidity rates—the poorer the housing, the greater the incidence of disease generally.

Tabulations by groups of selected areas in Chicago are presented in Table 86. Those twenty-six community areas contain slightly more than half the population of Chicago. From Table 86 it is evident that

TABLE 86. AVERAGE ANNUAL DEATH RATES IN SELECTED COMMUNITY AREAS, CHICAGO, 1940-44^a

| Area | All Causes | Principal Epidemic Diseases ^b | Tuberculosis ^c (All forms) | Respiratory Diseases | Infant | Age Group 1-4 (Per 1,000) | Maternal |
|-----------|------------|--|---------------------------------------|----------------------|--------|---------------------------|----------|
| Chicago | 1,076.6 | 3.6 | 50.1 | 46.1 | 29.3 | 2.26 | 2.0 |
| Group I | 1,448.2 | 5.0 | 150.3 | 85.5 | 38.4 | 4.19 | 3.2 |
| Group II | 1,227.8 | 3.9 | 36.8 | 50.8 | 26.9 | 1.81 | 1.8 |
| Group III | 1,195.2 | 6.7 | 87.0 | 62.3 | 32.8 | 2.59 | 2.2 |
| Group IV | 1,052.3 | 4.2 | 32.4 | 81.8 | 30.4 | 1.65 | 1.9 |
| Group V | 944.3 | 2.0 | 31.8 | 41.6 | 26.9 | 1.77 | 1.9 |
| Group VI | 914.2 | 2.4 | 27.9 | 33.3 | 23.4 | 1.95 | 1.8 |

Group I: Community areas 34, 38, 39, 40, 41. Group II: Community areas 1, 3, 6, 7, 8. Group III: Community areas 24, 28, 31. Group IV: Community areas 67, 68, 69. Group V: Community areas 26, 27, 29, 30. Group VI: Community areas 14, 16, 20, 21, 22, 23.

^a Based on data from Chicago Health Department.

^b Enteric, measles, scarlet fever, whooping cough, and diphtheria.

^c Excludes deaths from tuberculosis of Chicago residents occurring in sanitariums in Cook or Du Page counties (Oak Forest Sanitarium).

⁹ Martha Crumpton Hardy, "Physical Sickness of Children from Different Economic Levels in Chicago," *Journal of the American Medical Association*, CXVII (December 31, 1941), 2,154-61.

the average death rates for community areas in Group I are in nearly all instances higher than for the other groups. In fact, the tuberculosis rate is almost twice as high as that for Group II and many times higher than for other groups. Areas in Group I are on the near south side of Chicago, a region of great overcrowding.

PUBLIC HEALTH STATISTICS

by *Daniel H. Fillmore*

PUBLIC HEALTH, or vital, statistics are essential tools in planning and administering a health department program. While the term "vital statistics" commonly covers all statistical data which relate to births, marriages, deaths, the occurrence of disease, and the conditions associated with these events, they are truly "vital" only to the extent that they give purpose and direction to the health work in a community. The collection and filing of statistics by a health department are largely futile procedures unless they are analyzed carefully and the resultant data are used in determining the state of the community's health and the direction which health department activities should take.

Analysis of general birth and death rates in a community, over a period of as many years as such statistics have been reported, will, for example, establish trends which give significance to current rates, especially when they are compared with rates in similar communities and for the country as a whole. Death rates from specific causes are to some extent an index of the effectiveness of preventable disease control measures, provided the necessary means for prevention are available. Methods for control of malaria, for instance, are well known and available. The occurrence of new cases of malaria and of deaths from this disease, therefore, indicates that the individual, the community, the health department, or all three, have failed and that effective measures for control should be instituted.

Reports of communicable diseases are of value not only in determining the frequency of their occurrence but also in providing information which make it possible for the health department to trace contacts and impose control measures. The value of reports for these administrative purposes varies inversely with the span of time between the occurrence of the disease and the receipt of the report.

The use of public health statistics merely to prove the efficiency of health department services is not enough. They should be used

also to indicate danger spots in community health which can be eradicated only if health department activities are buttressed by community interest and support. If people are told the truth about conditions by means of statistics, they will support any honest effort toward improvement.

A health officer with a thorough understanding of public health statistics, their possibilities, and their limitations can use them effectively in a program of public health education. They will furnish the local color which endows health education with personal appeal. The statistics needed will be available, however, only if the health director has developed satisfactory methods of statistical reporting in his community and if he employs in the health department personnel adequately trained in the analysis of statistical data. In large departments the use of machines for tabulation and analysis is essential. In Chicago and Cook County few of the conditions just described are to be found. As a result, such statistical data as do exist are contributing little to the advancement of health work in the area.

In appraising the value of statistical data as indices of health progress in a community, two points must be kept in mind: (1) The extent to which many factors not related directly to health work may have contributed to the reduction in the incidence of communicable diseases and the lowering of death rates, and (2) the necessity for basing conclusions drawn from statistical data upon samples which are "representative," that is, sufficiently large, sufficiently varied, or extended over a sufficient period of time to be statistically significant. Statistics indicating little or no poliomyelitis in a community for a single year, for example, could not be considered representative. Equally fortunate conditions over a period of several years would have to be experienced before a health officer could draw conclusions about the efficacy of control measures.

In general, the birth and death statistics for the United States are reported accurately enough to be considered fairly reliable. The weekly reporting of communicable diseases, except for such spectacular ones as smallpox and poliomyelitis, is, however, notoriously poor for the country as a whole. The discussion of specific health problems in the chapters which follow will indicate the extent to which the statements just made apply to the various health jurisdictions in the Chicago-Cook County area.

Statistical data used in the Chicago-Cook County Health Survey were obtained from publications of the U. S. Bureau of the Census,

from published and unpublished reports of the Illinois Department of Public Health, the Chicago Health Department, and other official and voluntary agencies in the area. In using these data as the bases for statistical studies, care was taken in each instance to secure a sample that could be considered statistically significant.

PUBLIC HEALTH STATISTICS IN CHICAGO

Since the Chicago Health Department did not maintain a library at the time of the Chicago-Cook County Health Survey and its Statistical Section had only a few scattered formal reports of the department and of the U. S. Bureau of the Census, the survey staff were obliged to obtain numerous volumes essential to their study from the various libraries in Chicago. Early health department reports were found to contain an abundance of valuable statistical material, and the pattern for publishing data had been adhered to rather consistently. The periods covered by the reports ranged from one to eight years and reflected no policy for publication. Formal reports appear to have been published when funds permitted.

STATISTICAL SECTION OF THE HEALTH DEPARTMENT While this section is charged with the collection, tabulation, analysis, and safeguarding of all the health department's statistical data, it does not in any sense carry out this responsibility. Although fairly complete vital statistics are maintained, the work performed now is mainly the mechanical recording of figures. There is little evidence of analytical research or graphic interpretation of data through curves, charts, and pictographs.

Little or no control appeared to be exercised over the records and reports of other sections, and there seemed to be almost no attempt to compile or to consolidate the sketchy data which were available into a current over-all report. The section did not even possess a complete set of health department reports. No card catalogue was maintained for quick reference to the material that did exist.

PERSONNEL OF STATISTICAL SECTION Undoubtedly, the Chicago Health Department suffered acutely from personnel shortages from the beginning of the second World War and, like other agencies, had to curtail or even to abandon certain important services. There was, however, no evidence that the statistical work of the department had been staffed adequately even before the war. There were only two employees in the Statistical Section, and neither had the technical training or experience necessary to direct the statistical functions of

a health department serving three and a half million persons. The lack of academic training is not so serious, however, as the demonstrated lack of leadership in the development of a statistical unit able to serve Chicago adequately.

METHODS AND EQUIPMENT Records of births, deaths, and other health department data were transmitted to the mechanical tabulating unit in the office of the city comptroller for the transfer of information to punch cards for machine tabulation. This procedure would be satisfactory except for the fact that the tabulating unit in the comptroller's office has much other work to do which carries a higher priority. As a result, the processing of health department reports is delayed seriously. For instance, births and deaths, by sex, age, and community areas, for 1944 were not tabulated until May, 1946. While this case may be extreme, there is nevertheless chronic delay in the tabulation of other health department data. It is estimated that the health department work, if completely done, would require a minimum of 25 percent of the operating time of the tabulating unit.

Although from a financial viewpoint this present arrangement may be considered economical, it is not practical functionally. The health department should be in a position at all times to determine the status of the city's health and the department's activities, past and present. For this purpose, proper equipment for the unhampered use of the department is necessary. Little benefit would be derived from improving the reporting and tabulating arrangements, however, unless the department also acquired technically trained and experienced personnel for planning and executing the tabulation and analysis of the statistical data.

COOK COUNTY OUTSIDE CHICAGO

In Cook County outside Chicago the recording of births, deaths, and other data commonly classed as vital statistics is in conformity with the state law which provides for local registrars in all townships and municipalities. In most of the smaller jurisdictions this recording represents practically the entire function of the local health departments. Even in communities with full-time health units, health statistics play little part in the orientation and guidance of health work, for reasons which become obvious when the operation of the system is understood.

Local registrars are required to forward their collected records to

the Illinois Department of Public Health for machine coding and tabulation. By the time each local community receives the completed tabulation of its records, many months after their collection, much of the value of the statistics is lost. At one time, for example, before the tabulations were received the records of the Winnetka Health Department showed only two births in that village over a period of four years. Actually, there were 632 births belonging to the village during that time, but all except two had taken place in hospitals outside Winnetka. Although the births clearly should have been credited to the place of residence of the mother, the Winnetka Health Department had no record of them until the state health department had tabulated the records of all births in the state for the four-year period, allocated them according to the residence of the mother, and returned the statistics to the participating townships and municipalities.

STATE HEALTH DEPARTMENT STATISTICAL SERVICES FOR LOCAL COMMUNITIES

REGISTRATION AREA Since Illinois was admitted to the Registration Area for deaths in 1918 and for births in 1922, the recording of birth and death statistics in the state conforms with the standards laid down by the U. S. Bureau of the Census.

MORTALITY (DEATH) STATISTICS From 1921 to 1940 statistics were computed only for the 102 counties in the state and the cities of 10,000 population or more. Analyses in these areas were made for specific causes of death under one year of age, but breakdowns for sex and race were not carried out uniformly in all these areas. Beginning with 1941, all deaths were allocated as to place of residence within the state, as well as deaths of Illinois residents reported from other states. Sex, age, and race distributions were also tabulated, not only for the counties and the larger cities but also for the smaller civil subdivisions including townships, municipalities, and road districts. Up to the time of the Chicago-Cook County Health Survey, however, the Illinois Department of Public Health had carried merely the totals for Chicago, and had not provided statistics for subdivisions within the city.

BIRTH STATISTICS Records of births also were tabulated only for the 102 counties and the cities of 10,000 or more population between 1921 and 1940, but were extended to include the smaller civil subdivisions after 1941. An allocation as to place of residence of

mother has been made since 1941, in addition to the tabulation of births by place of occurrence, sex, race, and month. Only county and city (10,000 population or over) statistics for total live births have been published. Data for smaller subdivisions can be obtained from the office of origin. Although more extensive analysis of birth data has been possible since 1941, the shortage of competent statisticians has prevented a thoroughgoing presentation of natality data.

Stillbirth statistics are available from 1921 to date on the basis of occurrence only, and only for the 102 counties and the cities of 10,000 population or over. The coding of stillbirths and the analysis of causes and distribution has had to be deferred.

MORBIDITY STATISTICS Although the reliability of statistics on reportable diseases is open to question, the tabulation of the reports received is fairly complete from 1916 on. Some confusion has resulted from the lack of uniformity in interpretation of the allocation of cases. Generally, however, cases are presumed to have been charged to the place of residence of the patient. Sex, race, and age distributions are available for the "downstate" area as a whole (all Illinois except for the Chicago-Cook County area), but not for the smaller geographical units.

The Illinois Department of Public Health maintains two important registers, covering morbidity reports for venereal diseases and for tuberculosis, for the down-state area. The latter contains the names of all persons reported as tuberculous since 1921, and the former the names of all venereal disease cases reported since 1938.

CONFIDENTIAL MEDICAL REPORT OF CAUSE OF DEATH

The cause of death reported on death certificates is often misstated deliberately. Occasionally the truth is disguised because the physician knows that his full statement as to the cause of death will appear on certified copies of the death certificate furnished relatives of the deceased and insurance companies. Typical situations which prompt withholding and misstating the true cause of death are: (1) The actual cause of death may show some condition which implies social stigma (for example, a venereal disease, tuberculosis, pregnancy in an unmarried woman, congenital malformation, alcoholism, suicide, epilepsy. (2) The actual cause of death may cause difficulty to beneficiaries of an insurance policy when insurers claim that the cause was not covered in the contract or that it indicated a condition at the time of application which should have disqualified the insured.

(3) The actual cause of death might reflect unfavorably on the physician (for example, birth injury, puerperal septicemia, operative accident, infantile diarrhea, induced abortion).

New York City and the Province of Quebec have attempted to get around these difficulties by making the detailed cause of death confidential. As a result of several years' experience, both registration areas are convinced that reporting has improved greatly and that the scheme is working out in a practical way.¹

Recognized under-reporting of tuberculosis alone as a cause of death would appear to justify the adoption of a confidential reporting scheme. The institution of a confidential report, together with a determined educational program for physicians, offers the best hope of securing reliable cause-of-death reporting on which valid mortality statistics can be based.

RECOMMENDATIONS

It is recommended that:

1. Consideration shall be given to establishing a system of reporting by all local registrars which would require them to send all their reports of births, deaths, and related data directly to the full-time health officers of the Chicago-Cook County area. These officers, after having the data on the reports tabulated, would send the original reports to the Illinois Department of Public Health.

2. The full-time health officers in the area shall be authorized to appoint and to direct all local registrars.

3. Mechanical tabulating equipment and sufficient competent staff shall be secured to make current tabulations of births, stillbirths, deaths, and communicable diseases by age, sex, color, and place of residence for the Chicago-Cook County area as a whole and for each municipality and subdivision thereof.

4. Officials of the Illinois, Cook County, and Chicago health departments shall consider pooling their funds and staff to provide for such a county-wide tabulating system.

5. Consideration shall be given to initiating in Cook County a system of confidential medical reporting of causes of death.

6. A county-wide registry of all cases of tuberculosis shall be established and maintained.

¹The argument for the New York City plan is presented in an article by Thomas J. Duffield entitled "The Physician's Confidential Medical Report of Cause of Death," *American Journal of Public Health*, XXXIV (March, 1944), 271-74.

7. The present city-wide venereal disease registry shall be expanded to become a county-wide registry.

8. The Chicago Health Department shall secure a trained and experienced biostatistician to assume responsibility for the form and the analysis of all tabulations of public health statistics necessary to plan and to direct an adequate health service for the city.

9. Both the Cook County and the Chicago health departments shall prepare record manuals and make these records as similar as possible to allow for necessary or expedient interchange of information between the two departments.

10. The health departments of Chicago and of Cook County shall prepare and maintain manuals which explain policies, programs, and procedures which they have adopted and are following.

11. The health departments of Chicago and of Cook County shall publish annually for free distribution full reports of their activities; these reports should contain appropriate graphs, charts, tabulations, pictographs, and maps to illustrate existing health problems and trends and the accomplishments of these departments in their respective jurisdictions.

COMMUNICABLE-DISEASE CONTROL

by *Dudley A. Reekie, M.D.*

ALTHOUGH SICKNESS and death rates from most communicable diseases have dropped dramatically during the last seventy-five years, control measures and progress directed toward complete eradication of these diseases still constitute a significant part of most public health work. Since activities in relation to (1) the so-called contagious or air-borne contact diseases, (2) tuberculosis, and (3) the venereal diseases frequently are conducted by separate sections or bureaus in health departments and by specialized voluntary agencies, the discussion of these three types of work in the Chicago-Cook County area will be presented separately in this chapter and the two following chapters.

LEGAL REQUIREMENTS FOR REPORTING DISEASES

The Illinois Department of Public Health establishes the rules and regulations which govern the reporting of communicable diseases throughout the state. Revised regulations issued September 1, 1945, list fifty-eight diseases, defined as "contagious, infectious, communicable, and dangerous to the public health," which must by law be reported promptly to the local health authorities by any persons having knowledge of a known or suspected case.¹ The state health department provides franked mailing cards for this purpose to doctors, dentists, other practitioners, hospitals, and laboratories. According to state law, local health authorities are required to send to the state health department written copies of all reports of cases of the specified diseases which have occurred within their health jurisdictions. The organized health departments transmit monthly tabulations of the cases of reportable diseases to the state health department. The Chicago Health Department submits a daily summary. While munic-

¹ These regulations were issued in accordance with authority contained in the Illinois Revised Statutes for 1943, Chapter 111½, paragraphs 22-24. For list of reportable diseases see Appendix I.

palities without organized health services are required by law to send in daily reports, records indicate that often they fail to do so regularly and completely.

BIOLOGICAL SUPPLIES FURNISHED BY THE STATE

The Illinois Department of Public Health furnishes local health agencies and physicians with the following biological supplies used in connection with communicable disease control: alum toxoid for diphtheria; dick test outfit for scarlet fever; diphtheria antitoxin; diphtheria toxoid alum precipitated, combined with pertussis vaccine; dry plasma; immune serum globulin for measles; normal human serum; pertussis vaccine; typhoid-paratyphoid vaccine; pertussis vaccine alum precipitated; plain toxoid for diphtheria; poliomyelitis convalescent serum; rabies vaccine; scarlet fever streptococcus for immunization; schick test outfit for diphtheria; smallpox vaccine; tetanus antitoxin; typhoid vaccine; typhoid-paratyphoid vaccine.

CHICAGO HEALTH DEPARTMENT

The Communicable Disease Section of the Division of Preventive Medicine in the Chicago Health Department is responsible for the investigation of reports of all types of communicable diseases except tuberculosis and venereal diseases. Although, according to state law, the health department is legally responsible for reporting tuberculosis cases to the state, the Glackin Act transferred this function and all other tuberculosis control activities to a special commission which operates the Municipal Tuberculosis Sanitarium. Investigation of reports of cases and suspected cases of venereal diseases and of contacts are carried as part of the Venereal Disease Control Program of the Chicago Health Department.

Other activities of the Communicable Disease Section are: contagious disease control in the schools; investigation of contacts; placarding; the supplying of forms and printed notices used in control to parents, schools, dairies, and other groups; immunization. The Maternal and Child Welfare Section of the Division of Preventive Medicine also participates extensively in the immunization program.

There is no technically trained epidemiological staff. Control work is carried on by 102 part-time physicians attached to the Communicable Disease Section and 15 part-time quarantine officers. Ninety of these part-time physicians, acting as part-time field health

officers, are responsible for communicable disease control work in the schools and for investigation of cases or suspected cases of communicable diseases (except tuberculosis and the venereal diseases) in the ninety districts into which the city is divided. Each part-time health officer is supposed to visit every grammar school in his district daily and to check each child who has returned to school after an absence of two days. In addition, they receive directions by telephone from the headquarters of the Communicable Disease Section to investigate reports of cases or suspected cases and to visit contacts. They mail or telephone their reports of these investigations daily to the headquarters' office. Twelve of the part-time physicians act as supervising health officers, and also make special investigations upon request.

Two of the fifteen full-time quarantine officers are nurses; the others are lay persons trained in the department for this work. Their duties consist of visiting the homes of cases of communicable disease, placarding those which require it, and giving instructions for control measures. In serious cases, the quarantine officers may visit the homes daily to see that control measures are being carried out. Either the quarantine officers or the part-time health officers remove the placards at the end of the quarantine period. The headquarters' office keeps all records of quarantinable cases in post-dated files at the headquarters' office and thus is able to notify the part-time health officers or the quarantine officers of the dates for taking final cultures for examination from the persons quarantined and later for removing the placards and ending the quarantine.

Supplies of culture outfits and serums are kept in depots strategically placed for the use of the field health officers and of private physicians (usually in precinct police stations). The field officers are supplied also with all the necessary forms, placards, and printed mailing notices used as measures of control. The various types of printed material include notifications to parents to keep a child home from school, to school authorities to send a child home or readmit him, and to milkmen to refrain from taking empty bottles from quarantined premises and when to begin taking them again. The health department provides no manual describing the purposes of the various forms and notices, nor does it conduct a systematic educational program to inform the public about early manifestations of communicable diseases and the responsibility of each citizen for reporting suspected cases at the earliest possible date.

IMMUNIZATION PROGRAM Each year the Chicago Health Department conducts a vigorous immunization program against smallpox and diphtheria. The part-time health officers are responsible for the immunization of all new registrants in the grammar schools in their districts and also give reinforcing injections. When necessary, they inoculate children in their homes. The Communicable Disease Section also supplies physicians who give inoculations once a week at the various stations of the Infant Welfare Society of Chicago.

Nurses of the Maternal and Child Welfare Section routinely visit the home of every mother with a newborn baby in order to give postnatal instructions and to deliver the birth certificate. At this visit and, if necessary, on subsequent visits the nurses urge the mothers to have their children inoculated, particularly against smallpox and diphtheria. Many parents, of course, have this done by private physicians. From all others the nurses endeavor to obtain immunization consent cards, and they urge the mothers to take their children to the infant welfare centers of the Maternal and Child Health Section for inoculation by physicians attached to this section. While most of the children inoculated at these centers are less than two years of age, uninoculated children of any age are accepted. Nurses with special training at times give inoculations in the homes when it is impossible for parents to take their children to the centers.

From time to time, when the nurses find an unusually large number of infants and preschool children in need of immunization in a single neighborhood, the health department may send out a mobile clinic to inoculate all unimmunized children.

The Chicago Health Department reports that in 1944 its staff inoculated 46,000 children against diphtheria and 77,000 persons of various ages against smallpox. According to statements by members of the health department staff, 90 percent of Chicago children have been immunized against diphtheria by the age of six, the majority by the health department. This percentage includes the great number immunized by physicians in their private practice and in the clinics of the voluntary agencies. According to standard public health practices, 75 percent immunization against diphtheria among preschool children is good performance. Chicago's percentage is practical assurance against an epidemic of diphtheria in the city, so long as this ratio of immunized children is maintained. On the other hand, so long as there are children in the community without protective im-

munity against diphtheria, there will continue to be cases of the disease.

INCIDENCE OF COMMUNICABLE DISEASE IN CHICAGO

Table 87 shows the number of cases of six major communicable diseases reported to the Chicago Health Department during the period

TABLE 87. SELECTED COMMUNICABLE DISEASES REPORTED TO THE CHICAGO HEALTH DEPARTMENT, 1941 THROUGH 1945^a

| <i>Diseases</i> | <i>1941</i> | <i>1942</i> | <i>1943</i> | <i>1944</i> | <i>1945</i> |
|-----------------|-------------|-------------|-------------|-------------|-------------|
| Smallpox | 0 | 4 | 0 | 0 | 0 |
| Diphtheria | 509 | 561 | 386 | 70 | 34 |
| Scarlet fever | 5,152 | 2,994 | 2,579 | 4,513 | 3,847 |
| Measles | 25,097 | 2,197 | 13,613 | 2,701 | 5,314 |
| Whooping cough | 4,026 | 6,023 | 3,231 | 1,452 | 2,146 |
| Typhoid fever | 31 | 38 | 22 | 23 | 13 |

^a Source: Illinois Department of Public Health.

1941-45. Four cases of smallpox were reported in 1942; none since. The last two years show a remarkable decline in the number of diphtheria cases reported: 70 and 34 in 1944 and 1945, as compared with 509 and 561 in 1941 and 1942, respectively. The number of scarlet fever cases reported was lower in 1945 than in 1944 and 1941, but higher than in 1942 and 1943. The 25,097 cases of measles in 1941 and the 13,613 in 1943 indicate epidemic proportions in those years compared to the figures for the other three years. There were more cases of whooping cough reported in 1945 than in 1944, but the number was much smaller than in the other three years. While the number of typhoid cases is very small in each year compared to the number reported for other communicable diseases on the list, that there should be cases at all shows the need for constant vigilance in the detection of this disease. The variation in the cases reported for the different years in the five-year period indicates strongly the necessity for measuring communicable disease control, not by one year's fortunate or unfortunate experience, but by the trend over a period of time.

EVANSTON, WINNETKA, AND KENILWORTH

The public health nurses employed by the health departments in these three communities investigate reports of cases of communicable diseases. The full-time health officers make additional investigations of the more serious diseases reported.

It is stated that an average of 80 percent of the children entering

school for the first time in Evanston, Winnetka, and Kenilworth have been immunized against diphtheria and smallpox and that within six to nine months after school opens the proportion is raised to more than 90 percent. The efforts of the public health nurses in the communities are considered responsible for the increase in the percentage of inoculations. Table 88 indicates the effectiveness of Evan-

TABLE 88. SELECTED COMMUNICABLE DISEASES, EVANSTON, ILLINOIS, 1941 THROUGH 1945^a

| <i>Diseases</i> | <i>1941</i> | <i>1942</i> | <i>1943</i> | <i>1944</i> | <i>1945</i> |
|-----------------|-------------|-------------|-------------|-------------|-------------|
| Smallpox | 0 | 0 | 0 | 0 | 0 |
| Diphtheria | 1 | 0 | 1 | 0 | 0 |
| Scarlet fever | 62 | 84 | 48 | 92 | 151 |
| Whooping cough | 116 | 83 | 162 | 4 | 34 |
| Measles | 1,200 | 73 | 1,563 | 340 | 106 |

^a Source: Illinois Department of Public Health.

ston's immunization program for smallpox and diphtheria. No cases of smallpox were reported during the five-year period, and only two of diphtheria; none in the last two years. The largest number of scarlet fever cases reported in Evanston occurred in 1945. The figures for whooping cough and measles reflect the variation in the incidence of these diseases.

OAK PARK, BERWYN, AND CICERO

In these three communities communicable disease investigations are made by the full-time public health nurse in each health department, while the part-time health officers see the more serious cases reported, including diphtheria and scarlet fever. The limitations of time and technical training on the part of these health officers, however, militate against their being able to execute properly a program of disease investigation, control, and prevention. Moreover, they do not possess the standard technical qualifications for this work.

COMMUNITIES SERVED BY COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

Investigation of reports of cases or suspected cases of communicable diseases and contacts is the responsibility of the Cook County Department of Public Health in all areas of suburban Cook County except those areas with full-time health jurisdictions and those employing part-time medical health officers. Reports of the more serious communicable diseases are investigated by the director of the health de-

partment and his assistant, both trained epidemiologists. The original report about a case of communicable disease is made directly to the health department. Health department personnel notify the Tuberculosis Institute of Chicago and Cook County of cases which the department wishes investigated by the nurses on the Tuberculosis Institute staff.² This information is then relayed to the appropriate field nurse. As a result, many visits made by the nurses to find out about reported cases are so delayed that effective control of the patient and his possible contacts cannot be instituted.

The director of the county health department and his assistant also investigate epidemic outbreaks of the major communicable diseases, such as scarlet fever, poliomyelitis, and infantile diarrhea, in any municipality in the county without a full-time health department. Cases of the more serious communicable diseases, such as smallpox, diphtheria, typhoid fever, and encephalitis, are customarily removed from private homes and hospitalized either in the contagious wing of the Cook County Hospital or in the Chicago Municipal Contagious Disease Hospital. During 1945 the following cases of communicable diseases in Cook County were reported to the Illinois Department of Public Health: smallpox, 0; diphtheria, 2; scarlet fever, 1,461; whooping cough, 435; measles, 14,712; and poliomyelitis, 94.

The staff of the Cook County Department of Public Health in 1945 immunized 4,918 children against smallpox; 4,446 against diphtheria; and 628 against whooping cough.³ It was not possible to ascertain the number of children immunized each year by private physicians, voluntary agencies, or through arrangements made between the school authorities and local part-time physicians in certain school districts in the county or in "summer round-up" programs in parts of the county.

COMMENTS

The reporting of communicable diseases is by law a responsibility of laymen as well as physicians. Undoubtedly many cases are not seen by a physician. It is extremely doubtful whether many such cases are reported. Moreover, there are no criteria obtainable from the records to indicate the faithfulness of reporting even by physicians, but if

² The Tuberculosis Institute of Chicago and Cook County conducts a general health program in twenty-one communities outside Chicago, including investigation of reports of communicable diseases. Further discussion of the activities of the Tuberculosis Institute is given in Chapter 26.

³ Cook County Department of Public Health, *Five-Year Record, 1941-1945*.

the situation here were found to be the same as that usually encountered elsewhere, the record scored by physicians for morbidity reporting would not be flattering to them.

The major communicable diseases—tuberculosis, typhoid fever, diphtheria, scarlet fever, and poliomyelitis—should without exception be investigated by an epidemiologist who is a full-time employee of an official health agency. The first cases of chicken pox reported also should be seen by an epidemiologist to assure that no smallpox is overlooked. Reports of the more common communicable diseases, such as measles and mumps, may be investigated by public health nurses. Since the control of communicable diseases is contingent upon the investigation of contacts of cases—not just their diagnosis—only specially trained individuals should be used for this branch of communicable disease control. A good epidemiological service would offer a yardstick for measuring the effectiveness of reporting.

When cases are located, the measures for control in all the health jurisdictions in the Chicago-Cook County area appear to be reasonably adequate. In Chicago the quarantine officers and, when necessary, the part-time field health officers visit the cases of communicable diseases to give instructions as to care of the patient and methods of preventing transmission to others. In the rest of the county, nurses make such visits.

The discussion of immunization procedures indicates that in Chicago, Evanston, Winnetka, and Kenilworth a creditable job is being accomplished. Smallpox vaccination is not a requirement for school attendance. A regulation of this kind would simplify greatly the problem of securing a high standard of protective immunization and at the same time would conserve the time of nurses in securing consent slips. The method of recording immunizations of all kinds by check marks rather than by name provides no means of verifying the record. Consequently, it is impossible to determine an individual's immunization status. When children are transferred to schools outside the area, the immunization record is demanded almost always. Nowhere in Cook County is there to be found a system of family folders which includes the immunization status of separate individuals.

Discussion of tuberculosis control is not included in this chapter, since a separate chapter is devoted to the subject. It seems appropriate, however, to comment briefly on the transfer of all tuberculosis control activities from the official agency charged by law with the control of all communicable diseases to another city agency, the Mu-

municipal Tuberculosis Sanitarium. It is totally illogical to divorce such an important sector of health service from its normal relationship with the other health responsibilities carried by the Chicago Health Department. The situation created as a result is chaotic.

The activities of the Tuberculosis Institute of Chicago and Cook County in relation to communicable disease control also warrant comment. Although the Tuberculosis Institute nurses assist in the investigation of reports of communicable diseases in a number of communities in Cook County, they do this work in connection with the Tuberculosis Institute's program and have no direct responsibility to the Cook County Department of Public Health. It is not the purpose of this report to disparage needed health work. Before the establishment of the Cook County Department of Public Health, the work of the Tuberculosis Institute in this field filled an important need which was being served adequately by no other agency. The time has come, however, when this work should be assumed by the official health department. If the Tuberculosis Institute still desires to lend assistance, an operational liaison might be arranged with the county health department.

RECOMMENDATIONS⁴

It is recommended that:

1. A procedure shall be formulated for organizing the reporting of communicable diseases on a district basis throughout Chicago and Cook County.

2. When so arranged, physicians, hospitals, school authorities, and others shall be required to report promptly by telephone any known or suspected cases of reportable diseases to the district health authority and to confirm each report to such authority immediately on a franked report form; pending the setup of district substations, the same procedure shall be carried out by contact with the central headquarters.

3. Each written report of communicable diseases shall be examined immediately for completeness of information, and missing information shall be promptly secured by the representative of the appropriate health authority.

4. There shall be current and cumulative tabulations made of all communicable disease reports.

⁴These recommendations are contingent upon the adoption of a district plan of decentralization for Chicago and for Cook County.

5. Each report of a known or a suspected case of communicable disease shall be investigated personally by a suitable representative of the health department, with special reference to contacts and sources of infection, and with appropriate instructions for minimizing further transmission.

6. Minor communicable diseases may be investigated by qualified public health nurses, after having been instructed in the details of the investigation required, the information they are to provide, and the type of cases which should be referred to a physician from the health department for more critical diagnosis and epidemiological studies.

7. The major communicable diseases such as tuberculosis, syphilis, diphtheria, and initial cases of chicken pox, as well as all unfamiliar diseases, shall be investigated by a physician from the health department who is skilled in epidemiological techniques.

8. Regulations shall be adopted requiring immunization against smallpox before admission to public and parochial schools.

9. Acceptable records of immunization, including dates, shall be included in each child's school history.

10. An immunization register shall be maintained in connection with family folders in each district health center, if any, otherwise in the headquarters of the health authority.

11. The health authority shall inform local physicians and the general public through appropriate channels whenever an epidemic of a communicable disease appears imminent and that advice shall be given about methods of preventing or ameliorating the disease.

12. Press, radio, and other suitable publicity media shall be utilized regularly and persistently to inform the public about disease prevention and health promotion, in order to forestall the occurrence of unnecessary disease.

13. All personnel engaged in the control of communicable diseases shall be trained technically in their respective duties.

TUBERCULOSIS CONTROL IN CHICAGO AND COOK COUNTY

by *Arthur W. Newitt, M.D.*

THE FIRST SECTION of this chapter¹ deals with tuberculosis control in the city of Chicago, the second section, with the situation in Cook County, exclusive of Chicago. The data in regard to Chicago are presented in the following order: the extent of the tuberculosis problem in Chicago, in terms of mortality and morbidity; the legal aspects of tuberculosis control in Chicago, the work of the Municipal Tuberculosis Sanitarium Clinics; the B.C.G. vaccination program of the Tice Clinic; tax-supported institutions for hospital care of the tuberculosis; procedures for hospitalization. The discussion of each topic is followed by comment.

Although the death rate from all forms of tuberculosis in Chicago has dropped considerably during the last twenty-five years (see Figure 11), Chicago's record is much less favorable than that of many other cities.

EXTENT OF THE TUBERCULOSIS PROBLEM IN CHICAGO

For the period 1939-41 the death rate per 100,000 in Chicago from all forms of tuberculosis was 62.4. This rate placed Chicago in the sixty-ninth position among ninety-two cities with populations of 100,000 or more. The city which ranked first on the list reported a rate of only 15.6, while the rate for the ninety-second city was 151.7. The median rate for the ninety-two cities was 49.

Chicago's position also is unfavorable when comparisons are made by race. Among whites in 73 percent of the ninety-two cities death rates from all forms of tuberculosis were lower than in Chicago, and

¹ This chapter is based on an appraisal of tuberculosis control facilities in Chicago and Cook County made for the "Special Committee to Investigate the Tuberculosis Problem" of the Chicago Medical Society and at the request of Dr. Roland R. Cross, director of the Illinois Department of Public Health. The report was published in February, 1946. Statistics have been brought up to date wherever possible.

FIGURE XI

TUBERCULOSIS - ALL FORMS
DEATH RATES per 100,000
CHICAGO
1920-1946

100 -



Chicago's rate was next to the highest of the rates reported for the five cities with more than one million population. Chicago, with a death rate of 250.1 for its nonwhite population during the 1939-41 period, stood next to last on a list of thirty-nine cities qualified to report statistics broken down by race under the census rule.² Although the nonwhite population in Chicago was only 8.3 percent of the total population, the deaths from tuberculosis in the nonwhite group amounted to 33.3 percent of the total tuberculosis deaths that occurred during that period. The tuberculosis death rate for the white people of Chicago, on the other hand, was 45.4 for the same period.

While Chicago does not differ from other large cities in the distribution of tuberculosis deaths by age and sex, the epidemiological significance of these distributions needs to be given careful consideration in the development of any plan for tuberculosis control. Among white females the highest rates are found for those between 20 and 30 years of age. The rates drop between 30 and 40 years and then level off at a constant rate. In white males the death rate constantly increases from age 10 to age 60 before dropping slightly between ages 60 and 70 plus. In nonwhite females the highest death rate is at age 20, and while the rates are still very high as compared with those for white females, there is a sharp decline through succeeding age groups. In nonwhite males the death rates are exceedingly high, and they continue to rise until a rate of 435.9 is reached at age 60.

With such evidence it is quite obvious that the importance of the tuberculosis problem can be graded according to race, age, and sex in the following order: (1) nonwhite males, increasing with age; (2) nonwhite females at age 20, decreasing with age; (3) white males, increasing with age; (4) white females 20 to 30, slightly decreasing with age. The application of these observations to the casefinding program is discussed under that heading.

Another method used for the study of mortality from tuberculosis is the death ratio or proportionate mortality. The tuberculosis death ratio expresses the relative importance of tuberculosis as a cause of death, measuring the relation of the mortality from tuberculosis to the total mortality problem.

There are certain limitations to the interpretation of all mortality figures because they are based on *reported* deaths. Not all deaths from

² Mortality statistics according to two classifications, white and nonwhite (about 95 percent Negro) are available for cities with at least 20,000 nonwhite population or with 10 percent or more of the total population enumerated as nonwhite.

tuberculosis, for example, are certified as caused by tuberculosis. This error in reporting is especially true in localities where diagnostic facilities are inadequate. During the war period, particularly, it is probable that a number of civilian deaths from tuberculosis may have been assigned to other causes as a result of inadequate medical care.

Provisional figures on tuberculosis mortality for Chicago in 1945 show 1,837 deaths of which 1,178 were white and 659 nonwhite. The nonwhite deaths comprised 35.8 percent of the total.

NEGRO MORTALITY There is little doubt that Chicago Negroes, in common with the Negroes of other large cities, are subject to influences other than race susceptibility which contribute their share in producing the high death rate. It is a common assumption that whatever resistance people have to tuberculosis can be broken down by large or frequent doses of tubercle bacilli. Overcrowding will bring about this opportunity for infection if open cases of tuberculosis are living in close proximity to other people. The greatest prevalence of tuberculosis is found under conditions of poverty, overcrowding, and lack of proper facilities for cleanliness.

It was pointed out in Chapter 22 that these conditions are fulfilled notoriously in the Negro residential districts of Chicago. The largest and most congested district, with an area of 4.72 square miles, contains the living quarters of 300,000 people. The following tabulation shows the percentage of Negro population and the 1940 death rates in six community areas:

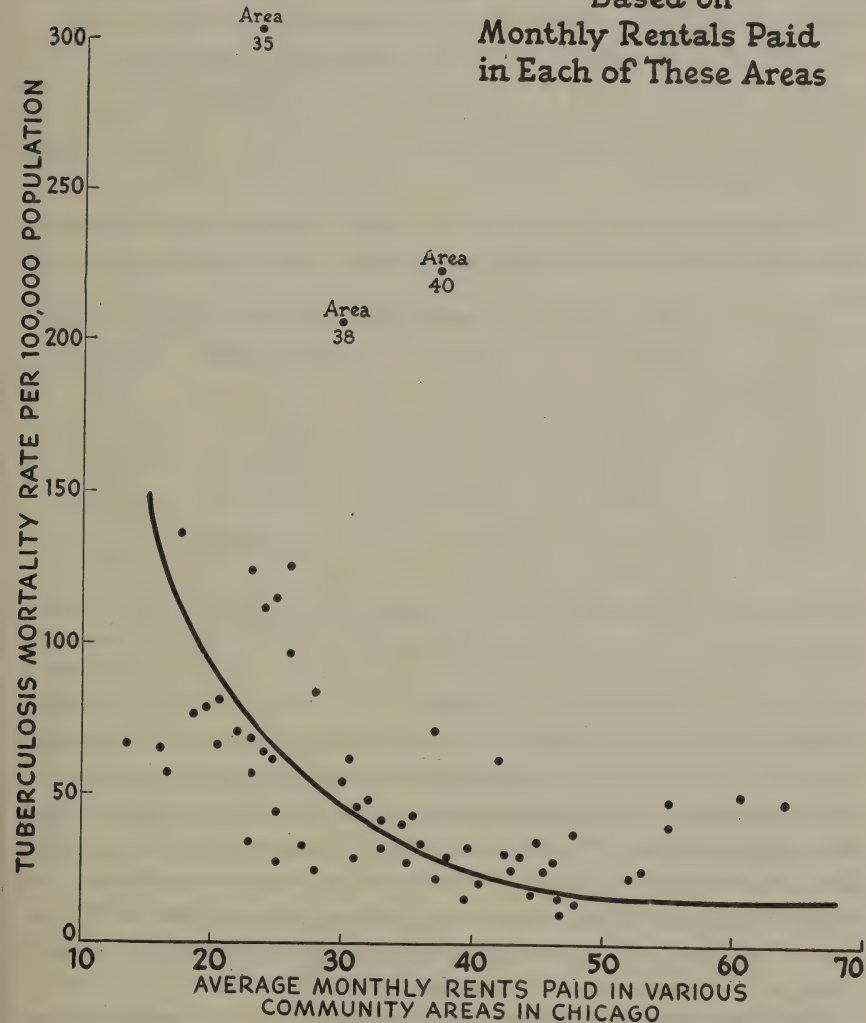
| <i>Community Area</i> | <i>Percentage of Negro Population</i> | <i>1940 Death Rates</i> |
|---------------------------|---|-----------------------------|
| 35 | 89 | 299.3 |
| 40 | 92 | 221.8 |
| 38 | 95 | 204.3 |
| 33 | 24 | 109.5 |
| 75 | 35 | 57.5 |
| 36 | 29 | 55.2 |

Figure 12 shows that the tuberculosis death rate increases as the rents paid for housing decrease. In the three most congested Negro districts with very high tuberculosis death rates (35, 38, and 40), however, Negroes paid substantial rent for very poor quarters.

Since 33 percent of the tuberculosis deaths occur in the Negro population, a high percentage of Negro patients under observation

TUBERCULOSIS MORTALITY RATES DURING 1940 for VARIOUS COMMUNITY AREAS of CHICAGO

Based on
Monthly Rentals Paid
in Each of These Areas



and treatment could be expected in the Municipal Tuberculosis Sanitarium clinics. Yet, Negro patients represent only 15 percent of those being treated with pneumothorax and 24 percent of all patients under clinic supervision. At the Municipal Tuberculosis Sanitarium only 21 percent of the patients were Negroes on the day of inquiry. At its North Riverside branch the percentage of Negroes was 19. It is reasonable, therefore, to conclude that Chicago Negroes are not getting tuberculosis control service in proportion to their needs.

It should be emphasized that Chicago's high Negro death rate is not the result of a great influx of tuberculous Negroes into Chicago during the war. The average number of nonwhite deaths during the three-year period 1939-41 was 706. In 1943 the nonwhite deaths totaled 659.

MORBIDITY AND CASE-FINDING Table 89 gives the number of new cases of tuberculosis reported for the years 1939 through 1945.

TABLE 89. NEW CASES OF TUBERCULOSIS REPORTED FOR CHICAGO

| <i>Year</i> | <i>Pulmonary</i> | <i>Other Forms</i> | <i>Form^a Not Known</i> | <i>Total Cases</i> |
|-------------|------------------|--------------------|-----------------------------------|--------------------|
| 1939 | 4,045 | 413 | 37 | 4,495 |
| 1940 | 4,942 | 299 | 121 | 5,362 |
| 1941 | 5,381 | 284 | 88 | 5,753 |
| 1942 | 5,529 | 245 | 101 | 5,875 |
| 1943 | 5,189 | 295 | 89 | 5,573 |
| 1944 | 4,278 | 191 | 177 | 4,646 |
| 1945 | | | | 3,975 |

^a Cases reported by private physicians who did not specify the organs involved.

The ratio of the number of cases reported to the number of deaths occurring in 1945 was 2.1 to 1. The majority of the cases are reported by the clinics of the Municipal Tuberculosis Sanitarium (M.T.S.). In addition, the M.T.S. maintains a 4 x 5 inch film photofluorographic mobile unit mounted in a large bus-type vehicle. This unit is engaged in chest X-ray examinations of industrial workers and other groups of the population. During the year 1945, 43,488 persons were X-rayed. Of these, 331 were diagnosed as tuberculous on the first films. Subsequent study of 77 additional persons revealed that their lesions were caused by tuberculosis, making the total 408 or 0.9 percent. Two new mobile units and one stationary small film unit have been on order for nearly two years.

The homes of newly reported cases are visited by a field nurse. Positive sputum reports are sent by the laboratory to the central office and are similarly investigated. New cases first revealed by death

certificates are added to the case register, and follow-up is carried out for the contacts.

The percentage of deaths reported by death certificates only during the six-year period was as follows:

| <i>Year</i> | <i>Percentage of Deaths from Tuberculosis</i> |
|-------------|---|
| 1939 | 15.4 |
| 1940 | 11.6 |
| 1941 | 7.2 |
| 1942 | 8.0 |
| 1943 | 8.5 |
| 1944 | 7.8 |
| 1945 | 8.6 |

COMMENT Table 89 indicates a progressive increase of "total" cases reported for the years 1939 through 1942, but a decrease in 1943, 1944, and 1945. The progressive decrease shown by the records for the last three years is disturbing, because during this period mass X-ray surveys discovered about four hundred new cases each year. It could be expected that such an increment of new cases would increase substantially the total number of cases reported. The only logical conclusion is that the number of cases reported by physicians and discovered in the clinics fell off markedly during these last three years. No explanation could be given by M.T.S. to account for this fact.

In 1945, 43,488 persons were X-rayed by the mobile unit, and there were 44,831 in 1944. If only 45,000 people were to be X-rayed each year, it would take 75 years to X-ray all the people, provided the population remained at the 1940 level. Even with the three additional units to be delivered, Chicago will be far behind its needs in this very important case-finding procedure.

In order to gain substantial ground with mass X-ray surveys, it is necessary to cover the whole population within five to six years. Otherwise, undiscovered cases in the population remain as sources of infection for a long enough period to start a new generation of cases. This new generation of cases in turn becomes infectious, and thus the vicious cycle is maintained.

Of course, it is necessary to improve reporting and case-finding in every way possible. Physicians should report every case coming to their attention, regardless of whether or not the case may have been

reported before. All others who are required by law to report cases should do likewise. All general hospitals would do well to emulate the few that routinely X-ray the chest of every inpatient and outpatient admitted. With the exception of clinics for infants and preschool children, all clinics not associated directly with a hospital should also X-ray the chests of patients. X-ray surveys should be made of inmates and employees of mental hospitals, institutions for the feeble-minded, and infirmaries of prisons, homes for the aged, and other places providing custodial care. Surveys of all industrial plants, large and small, should be conducted with the complete co-operation of management and labor. Surveys of selected neighborhoods where high death rates prevail could be intensified. There are, of course, many other groups which are or can be organized for chest X-ray examinations.

In selecting groups of people for chest X-rays, preference should be given to those revealed by statistics as particularly susceptible to infection and death from tuberculosis. The following groups, mentioned earlier in this chapter, should have preference in the order given: (1) nonwhite males, increasing with age; (2) nonwhite females at age 20, decreasing with age; (3) white males, increasing with age; (4) white females 20 to 30, slightly decreasing with age. Persons in these groups with inactive or quiescent lesions should receive clinical observation and supervision, and emphasis should be given to persons in the most susceptible groups.

LEGAL AUTHORITY FOR TUBERCULOSIS CONTROL IN CHICAGO

Under the Glackin Act, passed in 1908, communities in Illinois that wish to establish publicly owned tuberculosis hospitals do so by a majority vote of the people.

The law provides for the levying of a special tax on the taxable property of the community, the proceeds of which are known as the Sanitarium Fund. The mill tax levied for this purpose in Chicago was changed to a fixed levy in 1935 to stabilize the fund. The actual return from the "pegged" tax levy of \$3,000,000 amounts to somewhat less than 90 percent of the sum authorized, or about \$2,700,000.

THE SANITARIUM BOARD The Glackin Act provides for a Sanitarium Board of three members, appointed by the mayor with the approval of the Chicago City Council. Terms of office are for three years, staggered so that one member is appointed or reappointed each

EXPENDITURES AS SHOWN IN THE 1945 REPORT

| <i>Purpose</i> | <i>Amount</i> |
|--|----------------|
| Municipal Tuberculosis Sanitarium proper | \$1,594,277.61 |
| Clinics of M.T.S. | 524,986.49 |
| North Riverside Branch of M.T.S. | 213,621.45 |
| Repairs and renewals | 203,017.40 |
| General expenses | 145,168.43 |
| <hr/> | |
| Total gross expenditures | \$2,681,071.38 |
| Sundry income | 3,673.98 |
| <hr/> | |
| Net total expenditures | \$2,677,397.40 |

year. No member of the board may receive compensation as such. This board has complete control of the whole program.

The law provides that the Sanitarium Board may "extend the benefits and privileges of such institution under proper rules and regulations (established by the board) into the homes of persons afflicted with tuberculosis and to furnish nurses, instructions, medicines, attendance, and all other aid necessary to effect a cure, and to do all things in and about the treatment and care of the person or persons afflicted therewith and to stamp out tuberculosis in such city."

FEDERAL GRANTS-IN-AID During the fiscal year ending June 30, 1946, the sum of \$60,000 of Federal grants-in-aid for tuberculosis control was made available to Chicago through the Illinois Department of Public Health. Of this, \$56,773.73 was spent or encumbered during the year.

COMMENT ON LEGAL COMPLICATIONS The Glackin Act and the state laws governing the control of all communicable diseases are in conflict in the following respect. The Glackin Act stipulates that the Sanitarium Board shall govern all tuberculosis control measures. The state communicable disease control laws, however, provide that responsibility and authority for control of all communicable diseases shall belong to the Illinois State Board of Health, which may delegate this authority to local boards of health. The state law then requires the local boards to make and to enforce rules and regulations. No exception is made with regard to tuberculosis.

The Glackin Act specifically withholds police power from the Sanitarium Board so that it cannot enforce quarantine or force hospitali-

zation. The procedure utilized to get around this provision is described on page 522.

Many tuberculous patients will not enter a hospital or a sanatorium unless the authorities can cite a law which states that they can be hospitalized forcibly. When such a law is in effect, the reading of its provisions and penalties is sufficient to break down the resistance of the great majority of such patients. Forcible commitment of a few of the more recalcitrant cases is usually enough of an object lesson to others.

The lack of such legal authority is a severe handicap to tuberculosis control authorities in Illinois and especially to the Sanitarium Board of Chicago. The absence of such authority is probably a very important reason why many available beds are unoccupied.

Legal inconsistencies with regard to reporting of cases is another complication which handicaps proper tuberculosis control. The Glackin Act makes no provision for case reporting. The communicable disease laws require that tuberculosis cases be reported to the health department. In Chicago, therefore, the reports must be forwarded daily from the health department to headquarters of the Sanitarium Board.

This division of authority between the Sanitarium Board and the state and local health departments has given rise to misunderstandings between the Municipal Tuberculosis Sanitarium and the Chicago Health Department and has resulted in opposition instead of co-operation.

THE MUNICIPAL TUBERCULOSIS SANITARIUM CLINICS

In 1910 the Municipal Tuberculosis Sanitarium took over the administration of seven dispensaries established in 1907 and 1908 by the Tuberculosis Institute of Chicago and Cook County. In 1931 the treatment of clinic patients with pneumothorax was inaugurated. This program differs from the usual practice of treating only post-sanatorium cases in the clinics, in that the great majority of M.T.S. clinic patients receive their initial pneumothorax treatment in a clinic and receive further treatment as ambulatory patients, without ever being hospitalized.

At the present time, six clinics are in operation. These are listed below with the total number of cases under supervision in each.

Individuals under supervision include all persons under treatment, those under periodic observation for inactive or quiescent lesions,

CLINICS NOW IN OPERATION

| <i>Clinics</i> | <i>Total Individuals under Supervision June, 1946</i> |
|---|---|
| Damen Avenue (1638 North Damen Ave.) | 6,618 |
| Grand Crossing (1000 East 75th St.) | 6,337 |
| Kenwood (4525 Cottage Grove Ave.) | 7,245 |
| Racine Avenue (1215 South Racine Ave.) | 6,902 |
| Stock Yards (5310 South Halsted St.) | 5,419 |
| Washington Boulevard (2049 W. Washington Blvd.) | 5,425 |
| <i>Total</i> | <u>37,946</u> |

contacts of tuberculous persons, persons suspected of having tuberculosis, and patients referred by physicians or others for diagnosis. The total of 37,946 persons under supervision represents the number of persons carried in the active files of the clinics. They include some people who were found to be negative for tuberculosis and are counted because they appeared for examination.

Two distinct services are conducted for clinic patients: medical supervision and collapse therapy. New clinic visitors admitted to the medical service are examined. Those whom the clinician decides should be considered for treatment are then referred to a physician directly in charge of collapse therapy service. This one physician decides whether or not the patient should be referred for hospitalization or for collapse therapy treatment. If he considers collapse therapy suitable, he prescribes the treatment to be carried out. Cases discharged from the collapse therapy service are referred to the medical service for continued observation.

Collapse therapy service is given at five of the clinics used also by the medical service. The Racine Ave. Clinic provides only medical service. A collapse therapy service for outpatients is conducted at the Municipal Tuberculosis Sanitarium mainly for patients discharged from that institution.

During the month of April, 1946, a total of 13,249 patient visits were made to the six medical clinics of the Municipal Tuberculosis Sanitarium, and the following services were rendered: new persons examined, 1,858; re-examinations, 4,059; diagnosed as tuberculous, 178; diagnosed as nontuberculous, 1,390.

The collapse therapy services during this same month (April, 1946) were as follows: treatment, 1,320; observation, 114; post-treatment, 32.

The clinics are located strategically in congested areas of the city. The medical clinics are open week days from 9:00 A.M., to 5:00 P.M., on Saturday mornings, and two evenings a week from 7:00 to 9:00 P.M. The collapse therapy clinics have a total of 26 three-hour day sessions a week and 11 two-hour evening sessions.

During the year 1945 there were 159,287 visits to all clinics, and 20,804 individuals appeared for their first examination at the medical clinics. Of these, 1,798 were diagnosed as having tuberculosis. The case load, as of May 1, 1946, of patients receiving pneumothorax treatment was 1,320. During the year 1945 there were 279 new pneumothorax patients, 220 of whom received their initial injection of air in the clinics.

The clinics are conducted under the direction of a physician with the title Superintendent of Dispensary Service. The present medical staff of the clinics numbers 30, of whom 10 are full-time and 20 part-time clinic physicians. The part-time clinicians work from 9:00 A.M. to 1:00 P.M. or from 1:00 P.M. to 5:00 P.M. daily for six days. They work two hours in the evening sessions.

In addition to the actual services rendered to patients in the clinics, physicians and nurses on the clinic staff make visits to the homes of patients, render medical and nurse supervision to the four schools for crippled children under the Chicago Board of Education and to the physical improvement centers (formerly known as open window rooms) in thirty-one public schools. They also conduct chest X-ray surveys, provide dental care for children of tuberculous families, maintain case registers, make statistical analyses, perform public health nursing services for private physicians' cases, carry on public health education, and maintain relationships with other agencies. The total enrollment of the four schools for crippled children in 1945 was 2,183, and of the physical improvement centers, 2,826.

On the date of inquiry, August 1, 1946, 6 head nurses and 105 staff nurses served in the clinics of the Municipal Tuberculosis Sanitarium. Each clinic maintains its own corps of nurses. There are no medical social service workers on the staff, although provision has been made in the present budget for six social service workers. During the year 1945 the nurses made 157,396 visits to homes. These visits were for three purposes: (1) to investigate home conditions, (2) to give bedside care if necessary, and (3) to break the contact between the tuberculous patient and children under sixteen. Contacts of tuberculous persons are given appointments to visit the

clinics for examination. About one fifth of the new individuals visiting the clinics for the first time are contacts. Since the law stipulates that children under sixteen years of age may not remain in contact with a tuberculous person, special effort is made to separate them.

Each clinic has a case register. A master register is maintained in the central office. Each tuberculosis case that comes under supervision is given a number, and the contacts of that case are given the same number and designated as A, B, C, etc. The files are kept up to date as to changes in diagnosis, treatments, change of address, sputum findings, and other essential information. Current cases are filed separately from those discharged from service. The numerical file is cross-indexed with files of names and streets. Cases of private physicians are filed by names and addresses with cross reference by reporting physicians. Field visit reports are filed with the clinic records. Statistical analyses for the whole program are made and maintained in the central office. Spot maps showing location of cases are maintained.

THE B.C.G. VACCINATION CLINICS A research study of the effectiveness of B.C.G. vaccine as an immunizing agent against tuberculosis is being conducted under the auspices of the Municipal Tuberculosis Sanitarium at the Tice Clinic, with headquarters in the Cook County Hospital.³ The staff of the Tice Clinic consists at present of an acting part-time director, two pediatricians (one full-time and one part-time), five full-time nurses, one bacteriologist, one laboratory technician, one medical social worker, one X-ray technician, one secretary, and one maintenance man.

B.C.G. vaccinations were started at Cook County Hospital in 1937 after exhaustive studies of cultures, originally obtained from France, proved them to be nonpathogenic. Meticulous care is taken in the preparation of vaccine and in establishing control groups of non-vaccinated individuals who are comparable in every other respect. In addition to studies of the original group at Cook County Hospital, the clinic has parallel studies under different circumstances in progress at the Altgeld Gardens and Ida B. Wells Negro housing projects. Another study is being carried on in co-operation with the Cook County Department of Public Health at two orphanages in Cook County outside Chicago.

³The reader is referred to the medical literature for detailed reports on the results of this research. The results, so far, are very encouraging and are being observed with great interest by scientists and other research workers in this and other fields concerned with tuberculosis control.

COMMENT ON MUNICIPAL TUBERCULOSIS SANITARIUM CLINICS
The collapse therapy clinics were established in 1931 as a temporary substitute for hospitalization. In all reports published by the Municipal Tuberculosis Sanitarium, which give analyses of the results of pneumothorax treatment of clinic patients, the authors reiterate that this mode of treatment is not ideal and was inaugurated and continued only because of the lack of sufficient beds to accommodate the large number of patients requiring treatment. Nevertheless, no long-term study of clinic patients versus sanitarium patients has been made which would demonstrate unequivocally the comparative value and shortcomings of each method.

Comparisons have been made between clinic patients and sanitarium patients, but the patients were not classified into comparable groups in each stage of the disease, and the comparisons do not take into account the fact that the director of the collapse therapy clinics has the opportunity to select patients deemed suitable for treatment in his clinics. Even so, the reports show evidence that sanitarium patients did somewhat better than clinic patients.

This survey did not include an appraisal of the effectiveness of treatment of large numbers of clinic patients, but there was a distinct impression that too much reliance is placed on pneumothorax alone and that the pneumothorax collapse was continued in some patients long after it should have been abandoned as ineffectual. Reports on clinic operations state that patients with complications and indications for surgery are referred immediately to the Municipal Tuberculosis Sanitarium. However, published lists of treatments performed in both the clinics and the sanitarium indicate that some of the more common procedures employed in conjunction with pneumothorax were little used. For example, in the year 1944 only 31 pneumonolyses were performed in the sanitarium among 2,433 patients cared for during that year. In 1945, among 2,347 patients cared for, only 34 pneumonolyses were performed. Since the cutting of adhesions is necessary to bring about satisfactory pneumothorax collapse in up to one half of all pneumothoraces initiated, it would seem that far more pneumonolyses should have been performed.

In fact, the giving of initial injections of air to patients in a clinic is contrary to the following recommendations of the Committee on Therapy of the American Trudeau Society:⁴

⁴ *American Review of Tuberculosis*, L, 573-74.

Pneumothorax should be combined with institutional care from induction of collapse until the disease is brought under control and the pneumothorax stabilized. The use of pneumothorax for patients who are ambulatory from the beginning of collapse is a therapeutic makeshift, which may be dictated by economic and public health necessities but does not constitute a safe or adequate method of treatment and should not be confused with the medically ideal procedure.

Early closed intrapleural pneumonolysis should be used as an integral part of the pneumothorax program. Adequate facilities should be provided to make this procedure available for all patients who have limiting adhesions which require section.

It would be more convenient for the patients and would make for more efficient administration of the program if each of the clinics were equipped fully with X-ray apparatus. Three do have complete equipment, but the others have fluoroscopes only. Patients from these clinics must be referred for X-ray films to fully equipped clinics.

A considerable amount of the time of clinic physicians and nurses is devoted to providing health service to schools for crippled children and schools having physical improvement centers. Even though some children may have been crippled by tuberculosis and others may have a family history of tuberculosis, there is little or no justification for this special service from the Municipal Tuberculosis Sanitarium Clinics. Nothing is gained in tuberculosis control by such health supervision.

TUBERCULOSIS HOSPITAL FACILITIES

As Table 90 indicates, 2,738 beds for tuberculous patients in the Chicago area were available on the date of inquiry (July 31, 1946), of which 1,908, or 69.7 percent, were occupied. The combined bed capacity of the four tax-supported institutions was 2,368. Approximately 67 percent, or 1,584 beds, were occupied. The combined bed capacity of the five sanatoria operated by nonprofit associations was 370, and 326, or 88.1 percent, of the beds were occupied on the day of the inquiry. The Municipal Tuberculosis Sanitarium was the only governmental hospital on a par with the voluntary nonprofit institutions so far as occupancy was concerned. The following brief descriptions of the four governmental institutions (the Municipal Tuberculosis Sanitarium, the North Riverside Division of M.T.S., the Tuberculosis Division of the Cook County Hospital, and the

TABLE 90. TUBERCULOSIS HOSPITALS IN CHICAGO AND COOK COUNTY

| <i>Name of Hospital</i> | <i>Ownership</i> | <i>Bed Capacity</i> | <i>Percent Occupied (July 31, 1946)</i> | <i>Percent Available for Chicago</i> |
|---|--|---------------------|---|--------------------------------------|
| Municipal Tuberculosis Sanitarium | City of Chicago | 1,206 | 86.7 | 100 |
| North Riverside Division of M.T.S. | City of Chicago | 256 | 56.2 | 100 |
| Tuberculosis Division of Cook County Hospital | Cook County | 327 | 45.8 | 95 |
| Cook County Tuberculosis Sanitarium | Cook County | 579 | 42.1 | 80 |
| Fox River Sanitarium | Chicago Consumptive Aid Society | 75 | 65.3 | 100 |
| Winfield Sanatorium | Jewish Charities of Chicago | 75 | 100.0 | 80 |
| Edward Sanatorium (Naperville) | Tuberculosis Institute of Chicago & Cook Co. | 110 | 100.0 | 60 |
| Chicago Fresh Air Hospital | Chicago Fresh Air Hospital Assn. | 60 | 78.3 | 95 |
| Zace Sanatorium | Nonprofit Hospital Assn. | 50 | 90.0 | 75 |
| Total | | 2,738 | 69.7 | 91.8 |

Cook County Tuberculosis Sanitarium, familiarly known as "Oak Forest") probably indicate, at least in part, the reasons for the low occupancy rates.

MUNICIPAL TUBERCULOSIS SANITARIUM The Municipal Tuberculosis Sanitarium, located in the northwest section of Chicago, has 41 buildings on 160 acres within the city limits. The infirmary or hospital proper has 817 beds. A nursery with 5 cribs and the remaining 384 beds are located in stucco cottages which have a capacity of about 50 beds each. The medical staff, in addition to the general superintendent, consists of 1 medical superintendent, 1 assistant medical superintendent, 1 medical director of research and laboratory, 1 resident thoracic surgeon, 16 sanitarium physicians, and 1 night physician. There are no interns. The consultant staff consists of specialists in all branches of medicine and surgery. The institution is equipped completely for all types of medical and surgical treatment. With 21 staff physicians, the sanitarium is considered to have its full complement of medical service, there being 1 physician for each 50 patients. Only very recently however, has this full staff been available. There were only 9 physicians in January, 1945. One hundred nurses on the sanitarium staff provide 1 nurse for each 12 patients.

During the year 1945, 1,370 patients were admitted to the sanitarium and 1,340 were discharged. Of the cases admitted, 16, or 1.1 percent, were in the minimal stage, 122, or 8.9 percent, were moderately advanced, and 1,042, or 76.0 percent, were far advanced. The remaining 190 admissions were nontuberculous or unclassified. The total number of patients cared for during 1945 was 2,347, and there were 458 deaths, a fatality rate of 19.5 percent.

The following surgical treatments for tuberculosis were performed during the year 1945: pneumothorax refills, 26,661; pneumothorax initials, 449; pneumonolysis, 34; extra-pleural pneumothorax, 20; phrenicotomy, 60; thoracoplasty, 84; bronchoscopy, 138; orthopedic operations, 42.

The laboratory at the Municipal Tuberculosis Sanitarium examines all specimens submitted by its North Riverside Branch and by all the M.T.S. clinics, as well as those for the sanitarium itself. The laboratory maintains a complete service on all manner of specimens for pathological, as well as bacteriological, examinations. During 1945, 67,148 specimens of sputum were examined. The research carried on in this laboratory has made invaluable contributions to our knowledge of tuberculosis, and for many years its publications have received international, as well as national, acclaim. The staff of the laboratory consists of 1 medical director of research, 1 assistant director of research, 1 special research physician, and 2 research physicians, all of whom are included among the 21 physicians on the medical staff. The laboratory also has 1 sanitary chemist, 1 biochemist, 3 bacteriologists, and 27 technicians.

It is customary to give ambulatory inpatients passes to go to their homes for short visits. A patient with positive sputum cannot remain at home over night if there are children under sixteen years of age in the household.

NORTH RIVERSIDE DIVISION The North Riverside Division of the Municipal Tuberculosis Sanitarium was first used by the sanitarium as a home for men patients who had no home or were separated from their families because of the presence in their homes of children under age 16. The majority of the patients worked during the day. The institution was built and used for a time as a school for delinquent boys. It was not remodeled or refitted to make it suitable for the care of tuberculous cases. An infirmary was built in 1935 with accommodations for forty men unable to carry on as fully ambulatory patients. At present one whole floor of one of the former

school buildings has been closed, but the beds and furniture are still there. The number of patients in the hospital on August 6, 1946, was 151. During 1944, 178 patients were admitted and 217 were discharged.

The medical care of the patients is carried out by 3 physicians; 2 are on duty during the day, from 9:00 A.M. to 5:00 P.M., and 1 lives on the grounds and is on call at night. The nursing staff is made up of 1 supervisor and 9 nurses. All the nurses are registered. There are 4 attendants and 1 maid for the infirmary. The remaining buildings are cleaned and cared for by the patients living in them. About 90 percent of the patients had far-advanced disease on admission. Patients needing surgery other than pneumothorax are referred to the Municipal Tuberculosis Sanitarium, where all laboratory work is done.

COOK COUNTY HOSPITAL (TUBERCULOSIS DIVISION) The Tuberculosis Division of the Cook County Hospital occupies a separate building which is used exclusively for tuberculous patients. Although it is a county institution, less than 5 percent of the patients admitted live outside Chicago. A large number of patients are admitted as emergency cases, and usually they are very sick. On the day of inquiry, July 31, 1946, there were 150 patients in the Tuberculosis Division. Of the 737 patients admitted during 1945, 469 died in the hospital, a fatality rate of 63.6 percent for the group admitted.

Although the Tuberculosis Division of Cook County Hospital is not under the administration of the Municipal Tuberculosis Sanitarium, one of the M.T.S. physicians devotes half his time to the division as its medical director. Three interns are assigned regularly to this service, and each spends one month there as part of his rotating internship. The nursing staff consists of 3 supervisors, 3 head nurses, 4 staff nurses, and 13 student nurses. There are 16 attendants and 1 orderly.

Patients cannot be transferred directly from this division of Cook County Hospital to the Municipal Tuberculosis Sanitarium. Application for transfer must be acted upon in the same manner as if the patient were going directly from his home to the sanitarium. Because of this regulation and because of the hopeless condition of so many of the patients admitted to this division, it has come to be devoted largely to patients for whom relatively little can be done.

Laboratory service for the patients is limited. A technician on duty three times a week makes direct examination of sputa. The interns

make additional sputum examinations. The use of X-ray is limited. About 15 percent of the patients receive chest X-rays. Fluoroscopy is relied upon as a substitute. The building and furniture are old and run-down, and renovation of the building and new equipment are greatly needed.

COOK COUNTY TUBERCULOSIS SANITARIUM The Cook County Tuberculosis Sanitarium is a division of the Oak Forest Infirmary, located about thirty miles southwest of Chicago. It has a total rated capacity of 579 beds. On the date of inquiry (July 31, 1946) 244 beds were occupied. The sanatorium consists of two hospital buildings, seven cottages, and a children's pavilion. Four of the cottages were in use. The buildings have been renovated recently. During the fiscal year ending November 30, 1945, 447 patients were cared for. Of these, 75 died, a fatality rate of 16.7 percent. Twelve, or 1.6 percent, of the patients who died were so far advanced that they expired within one month after admission, six, or .08 percent, died within 60 days after admission, and eight, or 1.06 percent, died within 90 days after admission. The combined fatality was 3.46 percent within 90 days. During the same year 192 cases were admitted and 143 discharged; 43 of those discharged were nontuberculous. The data available do not give the stage of the disease for patients admitted, but of the 143 discharged cases diagnosed as tuberculous, 2 were in a minimal stage of the disease, 2 moderately advanced, and 96 far advanced. Their status at discharge was 50 improved, 17 unimproved, and 33 no change. The average length of stay in the hospital for these discharged cases was 11 months and 1 day. The case-load of the hospital showed a steady decline during the period, from 255 on December 1, 1944, to 229 on November 1, 1945. The children's pavilion is used as a preventorium; the children are contacts, with X-ray evidence of primary infection. Four boys and six girls were present on July 31, 1946.

One part-time physician is in charge. Other members of the medical staff are an assistant head physician and four junior physicians. In addition, there is an attending staff of two surgeons, a tuberculosis specialist, a roentgenologist, an ear, nose, and throat specialist, and a dentist.

A general director of nurses is in charge of the nursing staff of 7 graduate nurses and 32 practical nurses. The annual report states that the normal complement of nurses for the institution is 56. Other members of the staff are one dietician, one laboratory technician, one

X-ray technician, and a school teacher for the children in the preventorium.

The following surgical treatments for tuberculosis were performed during the year ending November 30, 1945: artificial pneumothorax (patients treated), 38; aspirations, 32; extra-pleural pneumothorax, 1; Lipiodol instillations, 168; paracentesis, 1; bronchoscopies, 4; phrenicotomies, 34; thoracoplasty, 5; pneumonolysis, 1.

COMMENT ON HOSPITAL FACILITIES None of the governmental hospitals provides social service, occupational therapy, or rehabilitation programs for the patients. The adjustment of many patients to prolonged hospitalization is difficult. They require expert assistance in resolving personal and family problems. Occupational therapy and rehabilitation are just as important as medical and nursing care.

The National Tuberculosis Association, in agreement with the recommendations of the American Trudeau Society, has set a standard of 2.5 beds per annual death as the minimum number of beds that should be provided for hospitalization of the tuberculous patients in an average community. In 1945 there were 2,004 deaths from tuberculosis in Cook County as a whole. To meet the N.T.A. standard, Chicago and Cook County would need $2,000 \times 2.5$ or a total of 5,000 beds. According to Table 90, 2,738 beds are provided, leaving a deficiency of about 2,300 beds. Chicago and Cook County now have only about 1.3 beds per annual death.

Unfortunately, the situation is even worse than would appear by the mere counting of beds. The Tuberculosis Division of Cook County Hospital, having been used for many years for the hospitalization of far advanced and usually hopeless cases, is not equipped or staffed properly for even the domiciliary care given to its patients. With less than half its potential capacity in use, actually about 170 of its beds are simply out of service. Since the public recognizes the institution for just what it is, there is little likelihood that patients with a real hope of recovery could be persuaded to be hospitalized there.

The North Riverside Division of the Municipal Tuberculosis Sanitarium serves a purpose for the isolation of tuberculous men. But, with the exception of the forty-bed infirmary, it is not suited to the care of patients other than those with a chronic disease not sufficiently disabling to keep them off their feet. In other words, it is also an institution for domiciliary care. For that reason, more than

one hundred of its beds should not be counted as accommodation for patients who are amenable to active treatment.

The Cook County Tuberculosis Sanitarium at Oak Forest presents a more hopeful situation, even though only 244 of its 579 beds are occupied. It has serious disadvantages, to be sure. It is located on the same grounds as the county home for indigent people and operates under the same general management. It carries the stigma of a poor house, and therefore many people will not consent to be hospitalized there. A good many of the patients referred to it are post-sanatorium cases which have relapsed. However, the institution has been renovated recently, and the group of buildings, with some additional modernization, could be a good hospital for care of the tuberculous. Most authorities agree that a so-called preventorium does not prevent tuberculosis and therefore is of no benefit to children in that respect. The maintenance of the children's pavilion is a needless expense and should be discontinued.

The Municipal Tuberculosis Sanitarium is the only hospital of the four governmental institutions which can be conceded to have reasonably good facilities. It is not altogether modern, since 384 of its beds are in cottages which in themselves do not contain all the facilities for proper care of patients. The fact that 86.7 percent of its beds are occupied indicates that patients prefer it to the other governmental hospitals.

It is evident, therefore, that the governmental tuberculosis institutions serving Chicago and Cook County have rated capacities which are inflated. In the case of the Municipal Tuberculosis Sanitarium, all patients are admitted to the infirmary or hospital proper. The cottages are used for patients who have recovered sufficiently to be ambulatory or semiambulatory, and therefore the use of cottage beds is restricted to that type of patient. With a surplus of cottage beds, there is a waiting list for admission to the infirmary. The M.T.S. reported that on August 1, 1946, this waiting list consisted of 35 men and 20 women, a total of 55 patients. This figure is definite evidence that there is a real demand for the accommodation of patients by the Municipal Tuberculosis Sanitarium.

On the other hand, North Riverside Branch, the Cook County Tuberculosis Sanitarium at Oak Forest, and the Tuberculosis Division of Cook County Hospital have long since reached the peak of demand for the type of patients they serve. In their present conditions

it is very unlikely that a higher percentage of their beds will be occupied. Consequently, the unoccupied beds in these four institutions, totaling 784, should be considered obsolescent. If modern hospital accommodations are to be provided to meet the minimum requirement of 2.5 beds per annual death, these 784 beds must be replaced. Chicago and Cook County need 5,000 beds to meet the N.T.A. standard. The rated capacities of all institutions in the area total 2,738, of which only 1,954 beds are adequate (2,738—784 obsolescent beds leaves 1,954 beds). After this number of beds has been subtracted from the 5,000 required to meet the N.T.A. standard, it is evident that Chicago and Cook County actually have a deficiency of a little more than 3,000 beds.

The importance of discovering all cases of tuberculosis within five or six years was discussed earlier in this chapter. Such a campaign could and should be carried out in Chicago and Cook County just as soon as small film X-ray equipment can be purchased and delivered and the necessary corps of specially trained personnel recruited or trained. If hospitalization is to be available for the large number of new cases that would be discovered in an intensive mass X-ray survey, the great urgency for providing the minimum requirement of 3,000 new beds becomes apparent. It may seem incongruous to advocate the establishment of 3,000 new beds when the Municipal Tuberculosis Sanitarium has a waiting list of only 55 patients. However, the length of a waiting list is not a good measure of the demand for hospitalization. Few patients would bother to make application if they knew that, in the ordinary course of events, vacancies for 55 patients higher on the waiting list would have to occur before they could be admitted. On the other hand, in localities in which new tuberculosis hospitals have been under construction the number of applicants usually exceeded their capacities before construction was completed. Another very important reason for the small present demand for hospitalization, in comparison to what it should be, is the decadence that has occurred in case reporting and case-finding in Chicago, particularly during the past three years. This phase of the situation also was discussed earlier.

If Chicago and Cook County are to provide and to maintain 5,000 beds for their tuberculous citizens and at the same time conduct an intensive case-finding program, provide adequate clinic facilities, and carry on all the other services and activities required for a vigorous tuberculosis control program, the cost will be considerable. However,

the issue is plain. The postponement of the inevitable day of reckoning has cost the lives of more than 2,000 human beings each year. The majority of these people were lost during their most productive years, and the cost has been paid in cash in a hundred different ways, to say nothing of the suffering of the victims of the disease and the anguish and despair of their bereaved dependents. Hidden cases of tuberculosis have been allowed to remain as unrecognized sources of infection to their families, friends, and neighbors. These cases have given rise to new generations of additional cases in a never-ending vicious cycle. The issue, that cannot be denied, remains. Known methods of procedure can eradicate tuberculosis. Will the people pay the price to get rid of the disease, or are they willing to continue to sacrifice 2,000 of their number year after year?

Is it good economy to furnish 5,000 beds for the tuberculous if after several years of intensive effort the disease is brought under control and consequently the need for beds is rapidly diminished? The answer is an emphatic yes. Under such circumstances the results will have justified the means amply. However, it is very doubtful whether by such a time there also will have been provided enough beds for the care of people with other chronic diseases. Tuberculosis hospitals could be converted readily for the care of patients with cancer, heart disease, and other types of chronic illness.

It is recognized, of course, that to reach the goal of 3,000 more beds will require several years. A careful study of existing facilities will be necessary to determine both the extent to which existing institutions might be converted for the care of the tuberculous and the amount of new construction needed. This study should give careful consideration to the location of the new hospitals. Undoubtedly, an important reason for lack of full occupancy of the beds in present institutions is their inaccessibility to patients and their relatives and friends. New hospitals should be within or adjacent to the community areas where the incidence of tuberculosis is high. They should be close to all sources of supplies and readily accessible to the staff and the consulting physicians.

It should be recognized that often general hospitals unknowingly admit undiagnosed cases of tuberculosis, even though many general hospitals refuse admission to known cases. In addition to the establishment of routine chest X-ray examinations in order to recognize such undiagnosed cases, the general hospitals could assist materially in the tuberculosis control program by establishing divisions for

the treatment of tuberculous patients, particularly those with minimal disease. Such patients usually require only short periods of treatment. General hospitals with competent chest surgeons on their staffs and with fully equipped operating room facilities are well adapted for the performance of thoracic surgery on patients referred from sanatoria and other hospitals which are less fully equipped. Of course, it is necessary to establish proper isolation and nursing techniques to protect personnel and other patients from cross infections. Such participation on the part of general hospitals in tuberculosis control would provide many beds to augment those already available in the special tuberculosis institutions.

PROCEDURE FOR HOSPITALIZATION Every patient referred to the Municipal Tuberculosis Sanitarium must present an application approved by a clinic physician. If a private physician desires that his patient be hospitalized at M.T.S., the patient must make application at the clinic serving his neighborhood. The application, together with the history, record of physical examination, and X-ray films, are sent to the sanitarium where these records are reviewed by the Sanitarium Admission Committee, composed of the medical superintendent and two staff physicians. If the committee agrees that the patient should be hospitalized, the patient is notified when a bed is available. Clinic physicians will visit the home to complete the application if the patient is unable to visit a clinic. Emergency cases usually are sent to Cook County Hospital or are referred there by general hospitals. The Sanitarium Admission Committee also determines which cases are to be referred to the North Riverside Branch. Patients are admitted to the Tuberculosis Division of the Oak Forest Infirmary through application to the Cook County Bureau of Public Welfare. Nonwhite patients are admitted to all the tax supported sanatoria, and there is no segregation.

The Glackin Act stipulates "that no person shall be compelled to enter the sanitarium or any of its branches, dispensaries or other auxiliary institutions without his consent in writing first having been obtained or in case of a minor or one under a disability the consent in writing of the parents, guardian or conservator as the case may be."

Because of this legal provision, the forcible hospitalization of a patient cannot be accomplished by the Sanitarium Board in its own institutions. This is the reason the Chicago Health Department must be called upon to establish and enforce quarantine and to initiate

any action taken to force hospitalization in an institution which is not under the direction of the Sanitarium Board.

Patients in a communicable state who refuse hospitalization may be referred to the Chicago Health Department with the recommendation that they be placed in quarantine. The state regulations governing the control of communicable diseases are explicit in requiring isolation of infectious patients who are in contact with children under age sixteen. However, the regulations are not specific enough to allow prompt forcible isolation of recalcitrant patients who do not happen to be living in contact with children under sixteen.

Since the Glackin Act stipulates that all patients be treated free of charge the only legal requirement is that the patient shall have been a resident of Chicago for one year. Transients are accepted for treatment in the clinics. The field nurses investigate the social circumstances and refer financial and other problems to the appropriate agency.

COOK COUNTY (EXCLUSIVE OF CHICAGO)

In 1945 there were 167 deaths from tuberculosis among the people residing in Cook County outside Chicago. The population in 1940 was 666,534, and the estimated population for 1945 was 750,000. The death rate for 1945, based on this population, was 22.2 per 100,000. It is not possible to arrive at a figure which would represent the actual number of hospital beds available to tuberculous patients who live in Cook County outside Chicago, because the two county public hospitals also are available to Chicago residents. Although M.T.S. and its Riverside Branch are restricted to Chicago residents only, the county institutions accept Chicago residents and care for them at county expense.

PROCEDURE FOR HOSPITALIZATION BY THE COUNTY Persons who have been residents of Cook County for a year or more may be hospitalized in the Tuberculosis Division of Cook County Hospital or at Oak Forest by making application to the Cook County Bureau of Public Welfare. There is no charge to the patients cared for in these two county hospitals. The Board of Commissioners of Cook County makes no separate appropriation for the care of tuberculosis cases. This cost is included in the budgets for Cook County Hospital as a whole and for Oak Forest, respectively. The admission of patients

is subject to availability of beds and acceptance by the physicians in charge.

CASE-FINDING AND CASE-HOLDING In 1945, 245 cases of tuberculosis (all forms) were reported from Cook County, exclusive of Chicago, a ratio of 1.4 cases to 1 death. Apparently case reporting is not as good as it is in Chicago, where the ratio was 2.1 to 1.

Health service in general for the county outside Chicago is administered by the Cook County Department of Public Health, which was separated from the Cook County Bureau of Public Welfare on December 10, 1945. There are 110 health officers of political units in the county, consisting of cities, villages, and townships. Each of these health officers is in direct charge of his or her jurisdiction. In addition to Chicago, full-time health departments are maintained by Evanston and the villages of Winnetka and Kenilworth (the Winnetka Health Department serves both villages) maintain full-time health departments. The remainder of the communities are served by health officers who are part-time physicians or laymen. Their functions are nominal. The county health department conducts the active program in these areas.

Since the people of Cook County outside Chicago have not voted to come under the jurisdiction of the Glackin Act, there is no sanitarium board for the county, as there is for Chicago. The Tuberculosis Institute of Chicago and Cook County (a voluntary organization) established the first tuberculosis clinic service for the county in 1927. The Tuberculosis Institute undertook to substitute in part for a county health department by establishing a public health nursing service in addition to its tuberculosis clinic services. This program has continued, although the county health department has been established since then.

The tuberculosis control program of Evanston is conducted jointly by the Evanston Health Department and the Tuberculosis Institute. In this city of 66,424 population, there were 12 deaths in 1945, giving a local death rate of 18.

A similar arrangement for tuberculosis control exists in the Winnetka and Kenilworth jurisdictions. The clinic here serves both the villages and New Trier Township.

During the fiscal year ending June 30, 1946, the Cook County Department of Public Health was assisted in its tuberculosis control program with the sum of \$8,656.70 from Federal grants-in-aid through the Illinois Department of Public Health.

COMMENT ON COOK COUNTY EXCLUSIVE OF CHICAGO The health centers, clinics, and public health nursing services sponsored by the Tuberculosis Institute of Chicago and Cook County and by other agencies are financed substantially by the individual communities served. The Cook County Department of Public Health could take over all health services, including tuberculosis control, if it had sufficient funds and personnel. Such an arrangement would relieve the individual communities of considerable expense, which would be spread over the county as a whole. With complete health supervision by one county agency, equally efficient service could be rendered to all the townships and villages.

The arrangements for admission of a patient to a tuberculosis hospital or sanatorium should be carried out by public health authorities rather than by welfare authorities. The emphasis should be on obtaining prompt hospital care and isolation for the patient.

THE TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY

This organization is a direct affiliate of the National Tuberculosis Association, is independent of the Illinois Tuberculosis Association, and is supported mainly by the sale of Christmas seals in Chicago and Cook County.⁵

The Tuberculosis Institute makes an annual appropriation of \$15,000 to \$20,000 to the Municipal Tuberculosis Sanitarium for the operating expenses of its mobile photofluorographic unit. It also has provided funds for establishing a pneumothorax clinic at Provident Hospital and for research work at the Montgomery Ward Clinics of Northwestern University Medical School.

In 1945 the Tuberculosis Institute acquired a new mobile 4 x 5 inch photofluorographic unit. The unit was operated for the most part in Cook County outside Chicago. A total of 12,681 individuals were X-rayed in eleven months. A portable 14 x 17 inch unit is also used for case-finding, and 707 such examinations were made in 1945. During 1945 the Tuberculosis Institute supplied enough tuberculin (purified protein derivative, or ppd) for 35,650 tests. Besides being used in tests given in its own health centers, the material was supplied to private physicians and to nineteen agencies for testing purposes.

Outside Chicago, the Tuberculosis Institute has established eight-

⁵ A detailed accounting of the activities of the Tuberculosis Institute of Chicago and Cook County is made in its 1945 annual report.

een health centers and clinics in as many Cook County communities. In 1945 there were 255 clinic sessions, serving 5,220 patients, or about 20 patients per session. Patients deemed by the clinician to be in need of X-rays are referred to private physicians who have the equipment. The films are interpreted by the clinic physicians.

The Tuberculosis Institute contracts with thirty villages and townships to provide a generalized public health nursing service. Specialized tuberculosis nursing service is provided in eleven additional communities. The institute employs a staff of 30 nurses under the direction of 1 supervisor. In the generalized program the nurses perform approximately the same services as those carried out by nurses in a local health department.

The Tuberculosis Institute conducts a rather elaborate program in many phases of public health education and co-operates with numerous other agencies in this respect. Pamphlets, posters, and exhibits are prepared. A speaker's bureau is maintained, and health education institutes are organized and conducted. A committee on tuberculous veterans is sponsored. A library of health education films is maintained, and films, projectors, and operators are available for free showings.

A counsellor on rehabilitation is carrying on a program in co-operation with the Illinois State Division of Rehabilitation. The counsellor serves on several committees interested in rehabilitation and delivers lectures to student nurses. His main activities, of course, are concerned with direct service to expatients in need of advice and placement in suitable jobs.

COMMENTS ON THE TUBERCULOSIS INSTITUTE The Sanitarium Board has discouraged the Tuberculosis Institute from carrying out a case-finding or health service program within the corporate limits of Chicago. With the single exception of one small X-ray survey of a Negro housing project which was recently completed, the Tuberculosis Institute has deferred to the wishes of the Sanitarium Board and concentrated its functions in Cook County outside Chicago. When it is realized that Chicago contributed about 70 percent of the \$326,000 (1945 figure) collected through gross Christmas seal sales in Chicago and Cook County, this situation is untenable from a public health viewpoint.

It seems illogical for the Tuberculosis Institute of Chicago and Cook County and the Cook County Department of Public Health to conduct duplicate programs. It is understandable that, in the ab-

sence of an official health agency, the Tuberculosis Institute recognized the need for generalized health services, and it deserves credit for attempting to supply them. However, now that the official department is established, there should be no further need for the Tuberculosis Institute's full activities in general health service. Of course, the health department should have sufficient funds and personnel to carry the program. There is definite need for the voluntary tuberculosis association's participation in the tuberculosis control program in Cook County, on a planned joint basis with mutually agreeable distribution of responsibilities.

The director of the Tuberculosis Institute points out certain deficiencies in the program conducted by the Municipal Tuberculosis Sanitarium which more active participation by the Tuberculosis Institute might improve. These are: (1) no written policy governing the activities of case-finding programs in industry; (2) no uniformity of policies regarding use of the tuberculin test; (3) no case-finding in public or private schools, colleges, or other private institutions; (4) no co-ordination of programs for Chicago and Cook County; (5) the serious problem presented by tuberculosis among the Negroes.

CLOSING COMMENT

There is need for immediate action under able leadership if the number of unnecessary cases and deaths are to be reduced as rapidly as possible in Cook County and Chicago.

The extent of the problem is known sufficiently, and the potential resources of the community are adequate to control the disease rapidly and even to eradicate it within a reasonable time.

Specific recommendations for each phase of the program can be worked out in detail most satisfactorily by the new tuberculosis control officer who will then have the responsibility for carrying out his own plan.

The savings to the taxpayers of Cook County will be measurable even in a few years in millions of dollars; the savings in human misery and suffering will be immeasurably great, but it will benefit most of all the people who will be spared from having tuberculosis.

RECOMMENDATIONS FOR CHICAGO (EXCLUSIVE OF COOK COUNTY)

It is recommended that:

1. A full-time qualified tuberculosis control officer shall be appointed. This officer, whose appointment is the principal and most

urgent need, should be a physician specially trained and experienced in public health administration and with a thorough knowledge of tuberculosis and of modern methods for its control.

2. The tuberculosis control officer shall be given full authority and responsibility to plan, evaluate, and carry out the entire tuberculosis program for the city. This authority, under existing laws, will have to come from both the Chicago Board of Health and the Sanitarium Board by joint arrangement.

3. The tuberculosis control officer shall be appointed for a term of not less than five years. He should be removable during such term of office only after a properly constituted hearing has demonstrated misfeasance or malfeasance of office.

4. The Chicago Medical Society shall be asked to nominate a committee of specialists in tuberculosis and roentgenology which should be appointed to serve without compensation as an advisory committee to the tuberculosis control officer.

5. The medical and administrative heads of the Municipal Tuberculosis Sanitarium, the North Riverside Branch, the Municipal Tuberculosis Sanitarium Clinics and the chest X-ray survey projects shall be responsible directly to the tuberculosis control officer and be governed by his policies and directives.

6. The central office of the Sanitarium Board shall be under the direct administration of the tuberculosis control officer or his immediate assistant.

7. The Chicago Board of Health and the Sanitarium Board shall agree formally on a policy whereby the administrative head of the Chicago Board of Health and the tuberculosis control officer shall formulate a plan to prevent duplication of services through prompt exchange of information between the two departments and joint use of facilities.

8. Accurate job descriptions for all persons engaged in tuberculosis control shall be required by civil service regulations, and the minimal qualifications of educational preparation and work experience shall be prescribed for each job classification. For professional positions the job descriptions and qualifications should be based upon the recommendations of the tuberculosis control officer. Reasonable probationary periods should be observed. Temporary appointments should be made only at the written request of the tuberculosis control officer and then only when eligibility lists are exhausted and an

emergent situation is demonstrated. Examinations should be held at frequent intervals to maintain lists of eligible candidates, particularly in grades where the turnover of employees is greatest.

9. Attempts shall be made to secure increased Federal grants-in-aid to Chicago so that the program may be executed more rapidly and co-ordinated with the tuberculosis control program of the rest of the state.

10. Immediate steps shall be taken by the new tuberculosis control officer to work out a joint plan of action with the Tuberculosis Institute of Chicago and Cook County with the advice and counsel of the advisory committee.

11. The responsible authorities of Chicago and Cook County shall adopt, as one of their primary objectives, the provision that there shall be at least two and one-half beds for tuberculous patients per annual tuberculosis death, as rapidly as possible; preferably within five years.

12. The Tuberculosis Control Committee of the Chicago Medical Society shall be appointed officially to assist the tuberculosis control officer in a study of ways and means to meet this objective (recommendation No. 11). The findings and recommendations should be reported to the mayor and the City Council of Chicago, the Board of Commissioners of Cook County, and the citizens at large, so that action can be started soon on this project.

13. Sufficient funds shall be provided the Tuberculosis Control Committee of the Chicago Medical Society to enable the committee to engage professional and clerical assistance, to provide office space and equipment for such assistance, and to reimburse the Chicago Medical Society for expenses incidental to the activities of its Tuberculosis Control Committee while carrying out recommendation No. 12.

14. The Glackin Act shall be amended to remove the requirement that no person shall be compelled to enter a sanatorium. The law should be amended further to provide authority by means of which a patient unwilling to enter a hospital or a sanatorium voluntarily may be committed to a tuberculosis hospital or sanatorium by a court of law on satisfactory evidence that such patient has tuberculosis and testimony by a competent health authority that such patient is a menace to the public health.

15. The state regulations shall be amended to require physicians

and others responsible for making communicable disease reports to report every case of tuberculosis which comes to their knowledge. Any exception regarding previous reports should be removed.

16. The Illinois state regulations forbidding contact of tuberculosis cases with other people shall be revised to include people of all ages instead of the present limitation to children under sixteen.

17. In order to place responsibility for a public health measure in a public health department, applications for admission of residents of Cook County-owned institutions shall be made to the Cook County Department of Public Health instead of to the Cook County Bureau of Public Welfare.

RECOMMENDATIONS FOR THE TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY

It is recommended that:

1. The new tuberculosis control officer shall confer with the director of the Tuberculosis Institute of Chicago and Cook County on a program of joint co-operation for tuberculosis control.

2. In line with the recommendations of the National Tuberculosis Association, the Tuberculosis Institute shall relinquish those health service activities (especially general public health nursing) which the Cook County Department of Public Health is now prepared to carry.

3. The Tuberculosis Institute shall publish a detailed annual financial statement which would be useful to the new tuberculosis control officer in planning his own program and would be of value to the public in evaluating the benefits received from its purchase of Christmas seals.

4. There shall be joint planning and program execution by a single tuberculosis control officer aided by the Tuberculosis Institute of Chicago and Cook County. The maximum benefit would be achieved from the total funds spent for tuberculosis control by the adoption of this plan. The problem of tuberculosis is so great in Chicago that there is room for every agency, official or voluntary, genuinely interested in co-ordinating tuberculosis control.

VENEREAL-DISEASE CONTROL

by *K. E. Miller, M.D.*

IN GENERAL, the venereal disease control program in Chicago has been farseeing and outstanding both locally and in national circles. Nearly thirty years ago the present executive officer of the Chicago Health Department, at that time health commissioner, also singled out the venereal diseases as a special target for attack. The Chicago Health Department has, in fact, always stressed gonorrhea and syphilis as diseases menacing the public rather than as moral issues. Commercial channels of publicity have been employed extensively, but perhaps most important from a publicity standpoint has been the splendid assistance which the local press has given to the cause of venereal disease control.

In 1937 and 1938 Chicago carried out the first mass program for blood testing. A million persons were examined, and in 1938 a large social hygiene clinic was established which served 1,500 to 2,000 persons daily, a precursor to the nationwide program of rapid treatment centers inaugurated during the second World War. Chicago, because of the establishment of its rapid treatment center in 1942, was in the forefront of this movement. Chicago has pioneered also in improved methods of case-finding and case-holding.

In Cook County outside Chicago venereal disease control is carried on by the Cook County Department of Public Health, and in Evanston, by the Evanston Department of Health.

THE PROGRAM IN CHICAGO

Chicago's venereal disease control program will be discussed under the following headings: personnel, budgets, diagnostic services, treatment services, epidemiology, and the situation with regard to prostitution and promiscuity.

PERSONNEL Since 1942 the venereal disease control program in Chicago has been under the direction of a full-time officer of the United States Public Health Service, whose original assignment to

the Chicago Health Department was for a period not to exceed one year. This officer has done exceptionally fine work in developing and modernizing venereal disease control practices in conformity with the general pattern of the Chicago Health Department's program. An officer on loan to a local health department from the U. S. Public Health Service, however, is not intended to remain longer than is necessary to organize the local program and to train a local employee for permanent service. This time has been exceeded, so that the Chicago Health Department should be expected to take over the direction of the program by appointing a competent director to be paid from health department funds.

The following tabulation shows the distribution of the 453 persons employed in the venereal disease control program by divisions of service during the fiscal year July 1, 1945, through June 30, 1946: administration, 12; epidemiology, 42; records-clerical (all departments), 128; laboratory, 50; orderlies, 36; nursing, 57; education, 6; clinical (part-time physicians), 28; clinical (full-time physicians), 15; dietary (including maids), 21; housekeeping, laundry, building maintenance, 55; extern—pharmacist, 3.

1946-47 BUDGET The total budget for the health department's venereal disease control program, presented in Tables 91 and 92, is \$1,325,972. The United States Public Health Service contributes \$662,606 of this amount (either in funds or in personnel loaned in the program)¹ and the Illinois Department of Public Health \$185,000, a combined total of \$847,606 from sources outside the city, and \$468,440 from city funds.

DIAGNOSTIC SERVICES The Chicago Health Department maintains seven clinics for the diagnosis and treatment of venereal diseases throughout the city. The Public Health Institute, a nonprofit pay clinic established for the care of venereal diseases shortly after the first World War, and a number of hospitals also provide clinic service to venereally diseased persons. Since the advent of rapid treatment methods, however, the volume of work performed in these non-health-department clinics has become relatively small.²

Chicago Health Department clinics.—Before the establishment of the Chicago Intensive Treatment Center, the clinics were the backbone of the treatment program, but since that time they have

¹ This total does not include \$9,926 (see Table 91) for salaries of the director and personnel engaged in record keeping who are on loan from the U. S. Public Health Service.

² The work of non-health-department clinics (including the voluntary hospital clinics) is discussed briefly on p. 536.

TABLE 91. 1946-47 BUDGET FOR ¹VENEREAL DISEASE PROGRAM
(EXCLUSIVE OF BUDGET FOR CHICAGO INTENSIVE TREATMENT CENTER)

| U. S. PUBLIC HEALTH SERVICE | | | | | |
|---|-----------|----------------------|--------------------------|-------------------|------------------------------|
| DIVISION OF SERVICE | AMOUNT | <i>Contributions</i> | <i>Personnel on Loan</i> | STATE OF ILLINOIS | CITY OF CHICAGO ^a |
| Salaries | \$664,494 | \$211,786 | \$9,926 | \$159,138 | \$283,644 |
| Administrative | 62,638 | 20,616 | 5,146 | 31,050 | 5,826 |
| Records | 102,784 | 31,368 | 4,780 | 43,920 | 22,716 |
| Epidemiology | 113,524 | 89,542 | ... | 15,000 | 8,982 |
| Laboratory | 131,598 | 12,318 | ... | 14,058 | 105,222 |
| Treatment | 226,128 | 57,942 | ... | 55,110 | 113,076 |
| Housekeeping & maintenance | 27,822 | ... | ... | ... | 27,822 |
| Expenses (including drugs and supplies) | 68,502 | | ... | 25,862 | 42,640 |
| Total | \$732,996 | \$211,786 | \$9,926 | \$185,000 | \$326,284 |

^a The city of Chicago also contributes \$128,722 in personnel assigned to the general program, bringing the total contribution from the city to \$455,006.

become largely diagnostic centers, except for the treatment of gonorrhea and the chronic phases of syphilis. During the period July through December, 1945, of 757 previously untreated cases diagnosed as primary or secondary syphilis in Chicago Health Department clinics, 751 were referred to the Chicago Intensive Treatment Center. Only six were admitted to a health department clinic for treatment. For the fiscal year July 1, 1944, through June 30, 1945, the

TABLE 92. 1946-47 BUDGET—CHICAGO INTENSIVE TREATMENT CENTER

| U. S. PUBLIC HEALTH SERVICE | | | | | |
|---------------------------------|-----------|----------------------|--------------------------------|--------------------------------------|------------------------------|
| DIVISION OF SERVICE | AMOUNT | <i>Contributions</i> | <i>Civil Service Personnel</i> | <i>Commissioned Officers on Loan</i> | CITY OF CHICAGO ^a |
| Salaries | \$403,806 | \$241,830 | \$20,861 | \$29,959 | \$111,156 |
| Administration | 36,912 | 18,144 | ... | 6,780 | 11,988 |
| Records | 27,384 | 19,314 | 2,430 | 2,430 | 3,210 |
| Laboratory | 30,304 | 11,910 | ... | 2,650 | 15,744 |
| Treatment | 221,210 | 153,972 | 18,431 | 18,099 | 30,708 |
| Housekeeping & maintenance | 87,996 | 38,490 | ... | ... | 49,506 |
| Expenses | 189,170 | 158,170 | | ... | 31,000 |
| Drugs, foods, Hospital Supplies | 188,670 | 157,670 | ... | ... | 31,000 |
| Nonexpendable equipment | 500 | 500 | ... | ... | ... |
| Total | \$592,976 | \$400,000 | \$20,861 | \$29,959 | \$142,156 |

^a The city of Chicago also contributes \$10,554 in personnel assigned to the Chicago Intensive Treatment Center, bringing the total contribution from the city to \$152,710.

record also shows that of the 1,097 cases of primary and secondary syphilis diagnosed in the clinics, 1,071 were referred to the Chicago Intensive Treatment Center and 6 were treated in the clinics. Miscellaneous reasons accounted for the disposition of the other twenty.

Laboratory service.—In Chicago the laboratory work for both the health department clinics and the Chicago Intensive Treatment Center is done in the laboratories of the Chicago Health Department, which meet the accepted standards for serological and bacteriological diagnosis of syphilis and gonorrhea, respectively. During the fiscal year 1945–46, 697,829 specimens were submitted or examinations made. The totals have declined progressively from 979,950 during the 12-month period July 1, 1942, to June 30, 1943. This decline is accounted for principally by the falling off of serological examinations for Selective Service, but there has been a decline in the examinations for gonorrhea also. The latter, however, including both smears and cultures, have shown less decline than the examinations for syphilis. The figures for gonorrhea are 196,089, 181,399, 171,006, and 183,215 for the fiscal years 1943, 1944, 1945, and 1946, respectively.

The total number of positive tests made by the Chicago Health Department laboratories during the fiscal year 1945–46 was as follows: serological (syphilis), 52,758; spinal fluid (syphilis), 871; darkfields (*treponema pallidum*), 2,548; smears (gonorrhea), 14,667; cultures (gonorrhea), 5,540; smears (*B. Ducrey*), 36; cultures (*B. Ducrey*), 26.

A notable diagnostic deficiency is the fact that the hospitals in Chicago and Cook County as a rule do not make routine blood examinations for syphilis of all patients. In view of the close relationship between syphilis and chronic invalidism, the tax-supported institutions should be required to make such examinations, and all other hospitals should be requested urgently to do so.

TREATMENT SERVICES For no group of diseases have treatment methods been changed so radically in recent years as for the venereal diseases, particularly syphilis and gonorrhea. Up to the second World War and for some time thereafter the treatment of these diseases was a long-drawn-out and uncertain procedure. The first significant break came with the discovery of the sulfa drugs, which were found highly effective in the treatment of gonorrhea. Next came penicillin, which afforded a method of rapid treatment for both gonorrhea and syphilis. The use of penicillin particularly led to the establish-

ment of intensive treatment centers, where the treatment of syphilis could be reduced from eighteen months to about eleven days, and that of gonorrhea from an indefinite number of months to one day. During the war intensive treatment centers were especially important as a means of removing the sources of venereal disease from contact with the military forces.

Treatment in health department clinics.—Up to the time of the establishment of the Chicago Intensive Treatment Center, in 1942, when treatment of primary and secondary cases of syphilis was transferred to that institution, the health department venereal disease clinics were depended upon for all treatment. The treatment of gonorrhea remains primarily a function of the clinics, though some cases are treated in the Chicago Intensive Treatment Center. The tendency in dealing with latent syphilis has been to drop many of these cases from the treatment rolls. The cases which are continued are handled principally in the clinics, though some have been treated in the Chicago Intensive Treatment Center, principally neurosyphilis cases requiring fever therapy.

New admissions to the seven Chicago Health Department clinics for the year 1943-44 were 14,279; for 1944-45, 15,056; and for the six-month period July-December, 1945, 11,660.³ The figures for syphilis, gonorrhea, and other venereal diseases during these periods were as follows:

| Disease | 1943-44 | 1944-45 | July-December 1945 |
|----------------------------|---------|---------|-----------------------|
| Syphilis | 6,410 | 5,937 | 3,846 |
| Gonorrhea | 7,369 | 8,781 | 7,752 |
| Other venereal diseases | 500 | 338 | 56 |

Fewer cases of syphilis were admitted in the 1944-45 period than in the previous fiscal year, but admissions increased during the six-month period ending December 31, 1945, and indicate a total for the year in excess of the two preceding fiscal periods. Figures are not yet available for the last six months of 1946 to prove or disprove this outcome.

Total venereal disease cases under care at the health department venereal disease clinics were as follows: June 30, 1944, 10,326; June

³ Statistics are not given for the individual clinics, since from 80 to 90 percent (or more) of the total admissions and total cases under care during each period were reported from the Municipal Social Hygiene Clinic, by far the largest of the seven health department clinics.

30, 1945, 7,716; and December 31, 1946, 6,074. Syphilis cases under care on the three dates were 8,626, 6,705, and 4,824, respectively. On June 30, 1945, 1,244 cases of gonorrhea were reported under care. Changes in the method of treatment make comparisons with corresponding dates in earlier years invalid. There were 88 cases of other types of venereal disease under care on June 30, 1944; 7 cases on June 30, 1945; 6 cases on December 31, 1945.

Treatment in non-health-department clinics.—Up to the time of the development of intensive treatment methods, the venereal disease clinics in the outpatient departments of voluntary hospitals carried a heavy case load. The Public Health Institute also served large numbers of patients.

For the month of December, 1944, a total of only 2,978 cases of syphilis under care, 233 cases of gonorrhea, and 6 cases of other types of venereal disease were reported by nine outpatient departments of voluntary hospitals, six unattached clinics (including two medical school clinics and the Public Health Institute), the Municipal Tuberculosis Sanitarium, the hospital and outpatient department of the United States Marine Hospital, and the prenatal, dermatology, and pediatric clinics of Cook County Hospital. More than half the cases of syphilis were reported by the Public Health Institute, and the Louis E. Schmidt Clinic of Northwestern University Medical School. Nine of the other institutions reported a total of only 203 cases of syphilis under care. Laboratory services were performed mostly in the institutions to which the clinics were attached.

Chicago Intensive Treatment Center.—This hospital, established in 1942, is located in an old building formerly occupied by the Wesley Memorial Hospital. It has a bed capacity of 200, and the average daily patient census indicates approximately 88 percent occupancy. The highest census recorded was 232 for April, 1946. During the fiscal year July 1, 1945, to June 30, 1946, the center admitted 6,711 patients, totaling 60,812 patient days. Since the opening of the hospital in October, 1942, to June 30, 1946, a grand total of 19,786 patients have been cared for. It has admitted more patients during the period of its operation than has any of the fifty-five other intensive treatment centers throughout the country and has stood at or near the top of the group in the average number of patients admitted monthly. Yet, the operating costs per patient day in the Chicago Intensive Treatment Center have been consistently higher than those reported for the other treatment centers. During the first six

months of 1946, for example, the average patient-day cost at the Chicago Intensive Treatment Center was \$7.76, while for the other fifty-five institutions it was \$4.53. This high patient-day cost, in comparison with the other institutions, results partly from the provision of fever therapy for patients with early syphilis and with neurosyphilis, a treatment not provided in the other centers, and partly from accounting practices. The Chicago Intensive Treatment Center includes the costs of research and outpatient services in computing its patient-day costs, although these items are not inpatient services.

Eleven days was the average length of stay of syphilis patients in the Chicago Intensive Treatment Center during the first six months of 1946. Syphilis patients in the other fifty-five hospitals also averaged an eleven-day stay each month during the same six-month period. The number of days gonorrhea patients stayed at the Chicago Intensive Treatment Center varied from two, in April, to ten, in June. For the other fifty-five hospitals, the average stay was three days for each of the six months. Since the one-shot method of treating gonorrhea was inaugurated in June, 1945, at the Chicago Intensive Treatment Center, there seems no reason for holding cases for as many days as appears to be the practice. They could and should be treated in the clinics or on an ambulatory basis at the hospital, thereby reserving hospital facilities for the treatment of cases of infectious syphilis. The prolonged period of hospitalization, however, results from the selection of cases for research purposes, including the use of fever therapy in patients who would not respond to more conservative forms of treatment.

The location of the Chicago Intensive Treatment Center is not chosen especially well from the standpoint of teaching value. It would, therefore, be highly desirable to have this hospital located at or near the medical center now in process of development on the west side of Chicago.

All authorities agree that the venereal disease program should be centered around infectious cases of both syphilis and gonorrhea. The trend of such cases is shown in the following figures for the fiscal years 1943 to 1946.

| <i>Fiscal Year</i> | <i>Syphilis (Primary and secondary)</i> | <i>Gonorrhea</i> |
|--------------------|---|------------------|
| 1942-43 | 2,146 | 12,772 |
| 1943-44 | 2,466 | 13,343 |
| 1944-45 | 2,805 | 15,061 |
| 1945-46 | 3,890 | 25,234 |

Since the trend is upward for both syphilis and gonorrhea, the question arises naturally as to whether or not the venereal disease control program is sound and effective. In evaluating this factor, several items must be taken into consideration. An active contact tracing unit undoubtedly brought to light many cases that would not have appeared otherwise in the morbidity reports. Moreover, many cases which in earlier years would have been treated by private physicians or by home or drugstore remedies sought the health department clinics, since these alone had access to penicillin. Then, too, the spectacular benefits derived from the use of the sulfa drugs and penicillin have robbed the venereal diseases of much of their terror and probably encouraged greater promiscuity. This situation was augmented further by increasing contingents of men returning from the war. Reinfection also was an important factor in accounting for the increase. Unpublished studies made by the Chicago Health Department show that since penicillin has made cure of gonorrhea so simple and easy, 18 to 20 percent of the cases treated in the clinics and in the Chicago Intensive Treatment Center were reinfections. Despite the fact, therefore, that statistically the number of cases of venereal diseases has increased, the large numbers of persons found infected and placed under treatment bear testimony to the splendid work done by the venereal disease control forces. One can only speculate upon what the situation might have been in the absence of an energetic venereal disease control program.

EPIDEMIOLOGY SERVICES Epidemiology is the study of the incidence of disease. In public health practice it applies particularly to communicable diseases or others presumed to be in some degree preventable. In a public health program, epidemiology not only receives and studies reports of such diseases, but makes an energetic search for foci of infection and lines of contact in cases of communicable diseases.

This work in the Chicago Health Department during the fiscal year 1944-45 occupied the full time of forty-two epidemiologic workers on the staff of the venereal disease control program. The volume of investigative work performed during this twelve-month period, shown in Table 93, may be considered an outstanding record. Cases brought to treatment, plus those who upon investigation were found to be not infected or already under treatment, represent a total of 63.2 percent for the first half of the fiscal year and 57.9 percent for the second half. While one out of five in the first half of the fiscal

TABLE 93. VOLUME OF INVESTIGATIVE WORK DURING THE PERIOD JULY 1, 1944—JUNE 30, 1945

| DISPOSITION OF CASES | CASES INVESTIGATED | | | |
|---|------------------------------|-------------------|-----------------------------|-------------------|
| | JULY 1— DECEMBER 31, 1944 | | JANUARY 1— JUNE 30, 1945 | |
| | <i>Number</i> | <i>Percentage</i> | <i>Number</i> | <i>Percentage</i> |
| Brought or returned to treatment | 16,541 | 47.2 | 14,452 | 37.4 |
| Already under treatment | 3,271 | 9.3 | 5,115 | 13.2 |
| Not infected | 2,344 | 6.7 | 2,805 | 7.3 |
| Subtotal | 22,156 | 63.2 | 22,372 | 57.9 |
| Not located | 3,954 | 11.3 | 4,548 | 11.8 |
| Out of area | 2,097 | 6.0 | 2,904 | 7.5 |
| No investigation desired or insufficient information | 3,160 | 9.0 | 5,190 | 13.4 |
| All other | 2,673 | 7.6 | 2,635 | 6.8 |
| Disposition pending | 1,018 | 2.9 | 1,016 | 2.6 |
| Grand total | 35,058 | 100.00 | 38,665 | 100.00 |

year and one out of four in the second half were either not located or were not investigated because information was insufficient, these figures are appreciably lower than those usually found elsewhere.

For the fiscal year ending June 30, 1945, of 2,555 contacts of early syphilis examined, 249, or 9.7 percent, were infected; of 7,035 contacts of gonorrhea examined, 1,682, or 23.9 percent, were infected.

The places of contact or exposure are of special importance as guides to particular locations requiring the strictest supervision. For the fiscal year 1944-45, 13 different types of places were reported by 3,720 contacts. Nearly half (1,735) named 511 taverns; almost as many (1,488) gave 300 hotels as the places of contact. Twenty dance halls were reported by 212 contacts; 59 restaurants by 87; 36 theaters by 97; 5 bowling alleys by 38; 4 railroad stations by 30; 11 schools by 14; and 7 drug stores by 11. Four contacts named 3 skating rinks, 2 reported 2 brothels, and 2 a hospital and a service center, respectively.

Although these statistics, of course, do not tell the whole story, but relate only to contact histories of early infectious venereal diseases, it is, nevertheless, clear that the most fruitful foci for venereal disease transmissions in this group were hotels and taverns, with dance halls as a poor third. The fact that only two cases were reported from two brothels would indicate that the repression program was rather highly effective during that period.

While the case-finding activities of the Chicago Health Department have been well above the average, the case-holding program has been sensational. Once a case of venereal disease is located in Chicago,

there is little chance of escaping treatment until cured or at least rendered noninfectious. Nurses and other case workers keep close vigilance over the movements of each case, and if necessary the patient is picked up in a health department vehicle and carried to the clinic for treatment or confined to the Chicago Intensive Treatment Center. When a case fails to co-operate, he or she is quarantined at home if necessary, pending submission to treatment. Evidence from all sources indicates that this policy is carried out without deviation or compromise.

Comment on prostitution and promiscuity.—A study of venereal disease incidence must necessarily take into account the clandestine sources of infection which account for an overwhelming proportion of the total.

For a long time Chicago has been cognizant of the prostitution problem and has taken aggressive steps toward its solution. The following quotation from Volume II of the survey made in the late thirties by the Chicago Recreation Commission is illuminating.

Conditions have undoubtedly improved since the flagrant wide-open days of twenty-five years ago. From the 3,500 houses of prostitution in operation in 1913, scarcely 400 are now in active operation at any one time, and these are rather the smaller, more insecure types and much poorer in prestige and finances. Nevertheless, ceaseless vigilance is required to keep the traffic from over-running the city. Thus, in 1935, the Committee of Fifteen was instrumental in closing 438 resorts, and 441 in 1936.⁴

The following statement, also taken from this report, is quoted from a memorandum specially prepared by Jesse A. Jacobs, director of the Committee of Fifteen.

Of the 400 resorts which may be operating at any one time in Chicago, it may be estimated that the 100 large places, having five or more inmates, average an income of \$3,000,000 per year; that the medium-sized resorts, having from two to four inmates, perhaps totaling 2,500 individuals, average \$5,000,000 a year; and that the individual street solicitors and workers, totaling perhaps 1,500, gross an income of \$2,000,000. This assumption would be based on an estimated total of 5,000 prostitutes working in Chicago at any one time.

The authors of *Commercial Recreation* considered these figures extremely conservative, and stated that in all probability expenditure items could be nearly doubled and still be not far from actuality.

⁴ Chicago Recreation Commission, *Commercial Recreation* (Vol. II, *Chicago Recreation Survey*), Chicago, Chicago Recreation Commission, 1938.

There was no attempt in these calculations to estimate the venereal diseases resulting from the prostitution traffic, but mathematically it is inevitable that the venereal disease rate is directly proportional to the number of exposures.

The figures given relate only to commercialized vice, or prostitution, as it existed before the second World War. With the onset of the war, however, the picture changed radically. Commercialized prostitution was drastically repressed. During the twelve months from July, 1944, to June 30, 1945, only two infections were credited to brothels out of a total of 3,720 traced. While brothels were virtually wiped out, service for pay found ways and means of survival, though unquestionably on a much reduced scale. The number of contacts was correspondingly reduced, and consequently the number of venereal disease cases was similarly affected. The most prominent factor in the war-time problem was the so-called "Victory Girl." As an outgrowth of the general war-time sagging of morals, many girls who normally would have followed the traditional paths of chastity rationalized their adventures in sexual promiscuity on the ground of "doing anything for the boys in service."

At the present time the most prolific source of venereal diseases is still sexual promiscuity rather than commercialized prostitution. A number of persons who have had important roles in governmental and voluntary agencies concerned with the control of venereal diseases have, without exception, been of the opinion that juvenile delinquency and promiscuity have increased greatly in this area during the last few years. This situation may be expected to persist unless energetic and intelligent steps are taken to correct it. Meanwhile, the forces of commercialized vice are poised to return to their old domain, if permitted to do so.

An undercover study of commercialized prostitution in Chicago, made in July, 1946, reveals the fact that the underworld as a whole is exceedingly wary of participation in the "girl racket" in any form at this time, because it fears entanglement with the law enforcement authorities. There was, however, a definite air of expectancy, everywhere encountered, that "it won't be long now" until the prostitution business will be back in the same old groove. The forces of repression have gained a signal war-time victory. They should redouble their guard now against a peace-time defeat.

Although hotels are high on the list of venereal disease contact foci, taverns present a more serious problem. The practices tolerated

at such resorts contribute either directly or indirectly to the spread of venereal diseases in many instances. Prostitution, more or less clandestine, is reported to exist in many such places in which the owners make use of promiscuous women to encourage drinking and to exploit their customers. An official investigation is needed to determine whether there should be more stringent laws to regulate taverns and other places where alcoholic drinks are sold for over-the-counter consumption, with particular reference to the employment of women in such places.

Obviously, the maintenance of high moral standards has much to do with the number of exposures to venereal diseases and hence to the resultant number of venereally diseased persons. The health agencies, however, must approach the problem of control from the standpoint of disease rather than of morals.

VENEREAL-DISEASE CONTROL IN EVANSTON

The commissioner of health in Evanston directs the venereal disease control program. There is a small, but well-appointed, clinic in the health department building, with the following staff: two part-time clinicians, who do the diagnostic and treatment work; a public health nurse, responsible for the epidemiological work and clinic service; and a clerk-stenographer. The total expenditures for salaries, aside from that of the health commissioner, is \$5,820, distributed as follows: part-time clinicians, \$900 each; public health nurse, \$2,280; clerk-stenographer, \$1,740. The amount expended for drugs and other supplies was not specified.

The following venereal disease cases were treated by the health department clinic during the fiscal year 1944-45.

| <i>Disease</i> | <i>Number of Cases</i> |
|-----------------------------|------------------------|
| Total syphilis | 175 |
| Early syphilis | 20 |
| Early latent syphilis | 53 |
| All other syphilis | 102 |
| Gonorrhea | 131 |
| All other venereal diseases | 1 |
| | <hr/> |
| Total | 307 |

There is no record of the number of venereal disease cases treated by local physicians. Since the Chicago Intensive Treatment Center

is open to patients from Evanston and other parts of Cook County, presumably primary and secondary cases of syphilis from Evanston are treated there also.

The clinic staff furnish the clinical diagnostic service. Laboratory diagnosis is performed in the health department laboratory. No statement can be made as to the volume of this work, because records of laboratory examinations for venereal diseases were not separated from the general laboratory records.

The clinic nurse is responsible for contact tracing, or case-finding, and for case-holding. Since the use of penicillin has reduced the treatment of gonorrhea to a one-shot procedure, the need for case-holding has almost ceased to exist. The only exception is the prolonged treatment still required for latent syphilis. Although there is no documentary evidence as to the efficiency of case-finding, in Evanston the impression prevails that it is effective.

COOK COUNTY, EXCLUSIVE OF CHICAGO AND EVANSTON

In all sections of Cook County except Chicago and Evanston the Cook County Department of Public Health is responsible for venereal disease control. The work is under the supervision of a venereal disease control officer, who performs other duties as assistant health officer. He is assisted by five part-time clinicians, by two nurses assigned primarily to venereal disease control, by other general staff nurses who include some venereal disease control work in their routine duties, and by one full-time epidemiological investigator (case worker).

There is no specific budget for the venereal disease control program. Since the program of the Cook County Department of Public Health is essentially a generalized service, all the field workers, with the exception of the sanitary personnel, carry venereal disease control along with other duties. The health officer, however, estimates that the cost of the services devoted to venereal disease control totals \$35,614, distributed as follows: public health nursing, \$14,034; medical service (part-time clinicians), \$9,000; investigators, \$2,640; secretarial, \$4,800; administration, \$1,640; travel, \$3,500.

CLINIC SERVICES Five county health department clinics are maintained at Berwyn, Chicago Heights, Harvey, Melrose Park, and Robbins. All have two sessions per week, except Chicago Heights, which has three. Both diagnostic and treatment work are performed in these clinics, but cases of infectious syphilis are referred to the

Chicago Intensive Treatment Center. The work of these clinics is considered of standard quality, but there is some question as to whether there are enough venereal disease clinics in the county outside Chicago and Evanston. For example, there are no clinics operated by either local health agencies or the county health department in Cicero, Oak Park, Wilmette, Kenilworth, Winnetka, and other large communities presumed to have a venereal disease problem.

LABORATORY SERVICES All laboratory work for the Cook County area (exclusive of Chicago, Evanston, Oak Park, and Berwyn) is done in the Chicago branch laboratories of the Illinois Department of Public Health. The record of the number and type of examinations made during the period 1942 to 1945 is presented in Table 94.

TABLE 94. LABORATORY EXAMINATIONS FOR VENEREAL DISEASES
(COOK COUNTY, EXCLUSIVE OF CHICAGO AND EVANSTON)

| TYPE OF EXAMINATION | NUMBER OF EXAMINATIONS FOR EACH PERIOD SPECIFIED | | |
|---------------------------------------|---|---------|---------|
| | 1942-43 | 1943-44 | 1944-45 |
| Serologic blood tests for syphilis | 205,074 | 249,915 | 187,700 |
| Spinal fluid for syphilis | 1,071 | 1,645 | 2,585 |
| Darkfield for syphilis | 61 | 44 | 72 |
| Cultures for gonorrhea | 11 | 39 | 29 |
| Smears for gonorrhea | 43,227 | 39,115 | 40,134 |
| All other tests for venereal diseases | 594 | 9 | 10 |
| Total | 250,038 | 290,767 | 230,539 |

These figures require some interpretation, as they do not result wholly from the county venereal disease control program. The large numbers of serologic tests for syphilis and smears for gonorrhea are quite out of proportion to the number of treatments given for these two diseases. The former includes the serologic tests made for Selective Service, plus those made in accordance with the law relating to prenatal and premarital requirements. The large number of examinations for gonorrhea is due in part to the legal requirement that gonorrhea tests be made on all applicants for marriage licenses. In contrast with these figures, the examinations for acute syphilis are exceedingly small. It is incredible that in such a large population as that of Cook County outside Chicago, so few darkfield examinations for infectious syphilis were made. It is recognized, of course, that this type of examination is most satisfactory if the specimen is taken directly from the patient, but transmission of specimens by mail is

practicable and should be used much more generally than has been customary.

CASE-FINDING AND TREATMENT The Cook County Department of Public Health reported treatment of 306 cases of syphilis from suburban Cook County for the year 1945, and private physicians reported 398, a total of 704. About one third of the health department cases and more than half of those reported by private physicians were in the late latent stage. The health department treated 141 infectious cases, and private physicians, 132. A total of 128 syphilis contacts were reported, and 107 found, of whom 66 were infectious. Only 13 of the 128 contacts were reported by private physicians.

Of 390 cases of gonorrhea reported, 228 were treated by private physicians and 162 by the health department. There were 98 sex contacts reported, 79 of whom were found.

The figures for syphilis and gonorrhea are not impressive. They point sharply to the need for a more intensified case-finding program. If the actual reservoir of venereal disease cases is no greater than the number found and placed under treatment, the expense of the venereal disease program in the county hardly is justified. One mitigating circumstance, however, is the fact that the Cook County Department of Public Health did not assume responsibility for venereal disease control until December, 1945.

RECOMMENDATIONS

It is recommended that:

1. Routine serologic tests shall be required in all hospitals and clinics.
2. A large venereal disease clinic shall be organized and operated in the Cook County Hospital.
3. Epidemiologic service shall be extended by the respective health departments to all clinics and hospitals in the area and to private physicians as they desire it, with special reference to contacts of patients seeking treatment for early syphilis and gonorrhea.
4. Improved facilities for housing the clinics now occupying unsatisfactory quarters shall be provided through new construction, preferably combined with general health clinics or associated with hospitals.
5. The Chicago Intensive Treatment Center shall be moved to a more suitable building.

6. Funds for operation of the Chicago Intensive Treatment Center and funds for research conducted there shall be obtained separately. In order to show the actual per-diem expense for care of patients, research costs should be excluded in calculating per-capita operating costs.

7. The research activities of the Chicago Intensive Treatment Center shall be reviewed carefully by its consultant staff to make sure that research funds are being expended on the most promising investigations.

8. The Chicago Health Department shall appoint immediately a venereal disease control officer to be paid from funds available to the department, thus relieving the present officer on loan from the United States Public Health Service.

9. The Cook County Department of Public Health shall be provided with the services of a full-time venereal disease control officer in addition to the existing personnel.

10. Consideration shall be given to a wider coverage of Cook County with clinics.

11. The case-finding function of the venereal disease control program in Cook County shall be strengthened materially as a condition for justifying the existence of the entire venereal disease service.

12. There shall be maintained a close liaison between the voluntary clinics engaged in venereal disease control activities and the official health agencies and all venereal disease records shall be handled through a central registry.

13. The vigilance of all forces concerned with sexual delinquency shall be alerted to the threat of the return to conditions conducive to the spread of venereal diseases.

MENTAL HYGIENE AGENCIES UNDER GOVERNMENT CONTROL

by *James R. Hurley, M.D.*

THIS SURVEY of the psychiatric facilities in the Chicago area reveals many gross inadequacies which are characteristic of the United States as a whole. In many respects Chicago may well be proud of its psychiatric achievements; in others it is woefully deficient. A most encouraging feature observed throughout the survey was the generosity of the entire psychiatric group—physicians, social workers, nurses, psychologists, and others—and their eagerness to accept any constructive measures. The group, almost without exception, is acutely aware of the inadequacies of their respective organizations to meet the demand for services and is quite frank in its discussions of such inadequacies.

The criticisms made in this report should not be interpreted as in any way a reflection on the relatively small group of psychiatrically interested people whose almost superhuman efforts have resulted in the progress made up to the present time.

Uniquely, psychiatry is not concerned solely with the disease of an organ or a system of organs, but involves the complete life picture of the individual so necessary for prophylaxis and treatment. Every endeavor of man in all phases of his cultural sphere, from infancy to senility, is the direct concern of the mental hygienist. Thus, the difficulties which beset any mental health program are apparent.

A brief review of the over-all picture will provide a background for the discussion of the situation in Chicago. Selective Service officials reveal that out of 4,800,000 rejections for service, 1,769,000 were for nervous and mental disorders. The neuropsychiatric division of the army states that 39 percent of the total rejections at induction centers were for personality disorders. More than 40 percent of its service discharges were likewise for neuropsychiatric reasons. The Veterans Administration indicated that neuropsychiatric cases com-

prise 60 percent of the entire hospital load. A monthly outlay of \$19,500,000 is required for pensions and compensation for neuropsychiatric disabilities now on the rolls, and this figure is increasing rapidly.

In 1942 more than \$200,000,000 was spent for the maintenance of tax-supported mental hospitals in the United States. More than half of all civilian beds are occupied by mental patients. New cases admitted annually aggregate 125,000, and it is estimated that 10,000,000 of the current population will need hospitalization at some time or other.

It is estimated that there are 1,400,000 mental defectives in the United States; only 10 percent of them are in institutions. Patients with alcoholic psychoses average 700,000 annually. Psychoneurotics, our major extramural problem today, constitute about 40 percent of the average general practice.

Our present resources are quite incapable of meeting this tremendous task with any degree of effectiveness. There are only about 3,700 psychiatrists in the United States—one out of every sixty-five physicians—to meet a problem that necessitates use of more than half the hospital beds in the country. The Veterans Administration alone estimates its present need at 1,500 psychiatrists, with a future peak of 3,000. About 4,000 psychiatrists are needed to meet minimum requirements for public service alone. In contrast to these needs, our training facilities produce but 100 trained psychiatrists each year.

The American Association of Social Workers estimates that there are about 2,000 trained psychiatric social workers in the country. With a conservatively placed need of three social workers to each physician, the deficiency is obvious. Comparable shortages exist in the other types of specialized personnel necessary to the program.

Prevailing salaries are inadequate. A recent survey of physicians' incomes compiled by "Medical Economics," reports that the average salary of the neuropsychiatrist (\$9,921) is the lowest of the specialties; yet salaries offered by most tax-supported agencies do not approach even this level. This factor is one of the major deterrents to progress in present-day psychiatry. Appropriations for research in mental diseases are but a small fraction of those expended for similar purposes in other fields of medicine.

Criticism of the Chicago facilities must be tempered, therefore, by consideration of the national situation. Nevertheless, the effec-

tiveness of the existing program must be measured in terms of what could be done under existing conditions. In the final analysis, the only criterion of adequacy is the service rendered the individual, both personally and as a member of the community. Is the present program satisfactory from this point of view? Are the measures toward prophylaxis, the opportunities for treatment, and the endeavors in research, teaching, and training sufficient to meet the minimum requirements? The answer is, unfortunately but emphatically, in the negative.

Because of the many intangibles, statistics cannot be resorted to as complete proof of the argument, but are utilized better as general indicators. Some of the agencies keep no statistics; others frankly admit the unreliability of those submitted.

The descriptions of the psychiatric facilities and services available to residents of the Chicago-Cook County area are grouped by the major type of control: state, county, city, Federal (the Veterans Administration), and voluntary. Facilities under governmental (official) control are described in this chapter. Chapter 29 takes up the mental hygiene services provided under voluntary auspices.

FACILITIES AND SERVICES PRIMARILY UNDER STATE AUSPICES

State psychiatric facilities and services available to residents of the Chicago-Cook County area are: the Division of the Alienist, the Illinois Neuropsychiatric Institute, the four state mental hospitals, the Institute for Juvenile Research, the Chicago Community Clinic, and the Veterans' Rehabilitation Center.

These facilities are under the direction of the deputy director of the Division of Medical and Surgical Service of the Illinois Department of Public Welfare. This deputy director is responsible to the director of the Illinois Department of Public Welfare who in turn is responsible to the governor. The various units of the psychiatric divisions are all-encompassing and more or less closely interrelated. The Division of the Alienist is an integral part of the Division of Medical and Surgical Service. The state alienist acts as a liaison officer between the county facilities and the state hospital system, between the courts and the Illinois Department of Public Welfare, and, in his capacity as executive officer of the Illinois Neuropsychiatric Institute, between the various teaching services in the area and the department. The Institute for Juvenile Research, although not under the Division of Medical and Surgical Service, but under Edu-

cational and Correctional service, is closely linked with the overall program through its relationship with the Illinois Neuropsychiatric Institute and the juvenile courts of the area. The state hospital system for both mental illness and mental deficiency is directly under the administration of the deputy director. The administrator of the Chicago Community Clinic, established for precommitment and follow-up care of state hospital patients, is responsible to the deputy director. The problem of psychiatric casualties among veterans resulted in the establishment of a Veterans' Rehabilitation Center, located on the same premises as the Chicago Community Clinic. This center also administers the program designed to establish branches of this rehabilitation service throughout the state.

THE DIVISION OF THE ALIENIST The offices of the state alienist are located in the Illinois Neuropsychiatric Institute. He acts in the following capacities.

1. As executive officer of the Illinois Neuropsychiatric Institute. In this capacity he controls appropriations to the institute designed for maintenance and salaries of maintenance workers.
2. As director of four schools of psychiatric nursing for affiliate nurses. These schools are located at the Illinois Neuropsychiatric Institute, Chicago State Hospital, Jacksonville State Hospital, and the Peoria State Hospital.
3. As supervisor of the teaching, research, and educational programs in these state hospitals.
4. As supervisor of the laboratories of the State Psychopathic Institute.
5. As supervisor of the state reformatory for women and the state training school.
6. As supervisor of a fund (\$25,000 annually) for psychiatric consultations to judges of criminal courts outside the Cook County area.
7. As advisor for the old hospital for criminally insane at Menard, Illinois.
8. As supervisor of the program for psychiatric residents in the state hospital system in co-operation with the Illinois Neuropsychiatric Institute.
9. As investigator and licensor of rest homes and private sanatoria.
10. As advisor to the medical services of the medical department and administrator of the program of medical jurisprudence.
11. As controller of the transfer of patients into and out of the

Illinois Security Hospital and the Psychopathic and Neuropsychiatric Institutes.

12. As liaison officer between the Illinois Department of Public Welfare and the departments of psychiatry in educational institutions.

It is accepted generally that this position is of tremendous importance in the correlation and direction of public psychiatric service. Accordingly, the position should be filled by the most efficient person the community can supply. Selection should be made through a civil service examination, not by appointment as under the existing law.

THE ILLINOIS NEUROPSYCHIATRIC INSTITUTE The Illinois Department of Public Welfare opened the Illinois Neuropsychiatric Institute in December, 1941, to "provide facilities for research into and teaching of the nature, causes, treatment and prevention of diseases and disorders of the nervous system." The plan for the institute was originated and evolved through an advisory body, the Illinois Psychiatric Research Council, composed of a professor of psychiatry at each of the four medical schools, the state alienist, and the state criminologist. Legal arrangements between the University of Illinois and the Illinois Department of Public Welfare provide for joint administration by these two bodies. Financial support comes entirely from state funds, with each of the state agencies concerned financing the particular division of work for which it is responsible.

The University of Illinois, through its College of Medicine, is responsible for the clinical direction and care and treatment of patients, and provides the professional staff, with the exception of the nurses. The Illinois Department of Public Welfare pays the University of Illinois for the cost of plant maintenance and operating services. Responsibility for the medical, social, and related professional services in the children's ward of the Illinois Neuropsychiatric Institute has been delegated by the University of Illinois to the Institute for Juvenile Research.

The Illinois Neuropsychiatric Institute provides both inpatient and outpatient services. Its work is divided into two major parts, a Division of Neurology and a Division of Psychiatry. Both these divisions are further divided into clinical and laboratory divisions. The laboratory facilities occupy the entire basement of the institute's building.

Teaching and research.—The departments of psychiatry and neurology of the University of Illinois are responsible for all teach-

ing and research activities. Other medical schools participate in the teaching program by request. Research projects at the present time include investigations in neurophysiology, insulin sensitivity, and new anticonvulsive drugs; blood and spinal fluid studies; studies of fatigue states and of the psychosomatic aspects of arthritis; and the effects of prefrontal lobotomy in collaboration with the neurological department.

Residencies.—There are three regular residencies, three-year appointments with the following remuneration: \$660 for the first year, \$880 for the second, and \$1,100 for the third. These are approved by the American Medical Association and the American Board of Psychiatry and Neurology. There are also four special residencies under the present G.I. Bill of Rights. Four psychiatric "research fellowships" have been created recently. These are one-year appointments awarded to residents nominated by the professor of psychiatry at each of the four medical schools in Chicago under university auspices (Chicago, Illinois, Loyola, and Northwestern).

Inpatient facilities.—The Illinois Neuropsychiatric Institute has a capacity of 150 beds, 100 for psychiatric, and 50 for neurologic cases. Because of staff shortages and for other reasons, only about half the bed capacity is used, including the 14 beds for children allotted to the Institute for Juvenile Research. A complete psychiatric inpatient unit is maintained, including a nursing school affiliation and divisions of social service, occupational therapy, recreational therapy, physical therapy, and hydrotherapy. The neurological unit is entirely separate from the psychiatric unit.

All psychiatric patients admitted are selected by the Department of Psychiatry of the University of Illinois, primarily on the basis of their general usefulness in the teaching of clinical psychiatry. The department also selects the committed patients admitted to the institute and those transferred from state mental hospitals.

During 1946, 180 adults and 8 children were admitted for the first time to the psychiatric division of the institute as inpatients. The average daily census on the adult ward was 21 and on the children's ward, 9. The neurological division, entirely separate from the psychiatric, had 487 admissions and an average daily census of 28.

Outpatient facilities.—At the present time the clinic staff consists of 25 psychiatrists and 15 neurologists, each of whom spends a half day weekly in the clinics, and 5 neurosurgeons who spend one day each. None is paid. Residents spend two months in the out-

patient department, six on the psychiatric service, and three on the neurological service. Six medical students spend a half day per week for six-week periods.

Only citizens who have resided in Illinois for at least a year and are unable to afford private psychiatric or neurological care are accepted as patients. Selection of outpatients is made primarily from the research and teaching standpoint. The social histories of the patients are obtained at the time of admission or from the referring agency. An admitting examination follows, and whatever laboratory tests are requested by the examining physician. Appointments for a psychiatric or neurological interview are then given. Because patients are accepted only on the basis of their suitability for teaching and research, the number of patients accepted for treatment is probably much smaller than the number diagnosed. The diagnostic service is probably the largest in the city. No visits are made to the homes of clinic patients. If patients become bedridden, they are referred to the Visiting Nurse Association of Chicago.

The total average monthly case load for the outpatient department in recent months has been 1,048. Of this number, 483 belonged in the psychiatric division (new patients 93, and old patients 390) and 565 in the neurological division (new patients 136, and old patients 429).

Since 1942 the outpatient department has been carrying a certain percentage of ambulatory cases under treatment with electric shock therapy. Three treatments per week are given, and an average of ten to twelve patients are treated daily. The usual procedure in this case is to have the patient come to the hospital at 9:00 A.M. and be taken home at 11:00 A.M. by a relative.

The epilepsy clinic.—This clinic is a subdivision of the outpatient department, although entirely independent of it. It was organized as a consultation clinic under the auspices of the Department of Psychiatry of the University of Illinois. All patients are seen by appointment, and on an average four new patients are accepted daily. An attempt is made to limit admissions to patients who have been examined fully at other clinics, but there are few other restrictions. As soon as a patient's disease is under control, he is returned to the clinic from which he was referred. The institute assigns a few beds to the epilepsy clinic for short observation periods.

Social service.—The social service divisions of the inpatient and the outpatient departments are separate and for all intents and pur-

poses independent of each other. The inpatient service consists of a chief social worker, an assistant, and eight students. They are responsible for all inpatients during hospitalization and handle some of the patients during their follow-up period in the outpatient department. Each student carries from two to four cases, and a few selected cases are carried on a controlled therapy routine under the supervision of the chief worker and the psychiatrist.

Social service in the outpatient department is provided by a chief worker and two assistants, who are also in charge of the social service in the regular medical clinics. The greater portion of their work consists of short contacts although a few cases, both neurological and psychiatric, are carried on an intensive therapy basis. No home visits are possible, because of the tremendous psychiatric and neurological case load. The total number of cases cleared by this department and subsequently seen by physicians averages about four hundred a month.

Nursing services.—Administration of the nursing services at the institute is carried directly by the Illinois Department of Public Welfare. The institute has no nursing school of its own. It is, however, organized to handle a relatively rapid turnover of nurses from eight hospital nursing schools with which it is affiliated and of senior cadets in the U. S. Cadet Nurse Corps from fifteen schools. The student nurses are accepted for a twelve-week course, while the senior cadets are in residence for a six-month period. On the average, sixty affiliating nurses are in training at the institute at all times. The aim of the institute is to make psychiatric affiliation for student nurses available to all the approximately ninety-six hospitals in the Chicago-Cook County area.

The institute is affiliated also with the training program for nurses in conjunction with the Chicago, Peoria, and Jacksonville state hospitals. This program is said to serve from 1,500 to 2,000 students annually, although last year only 1,117 students were graduated.

Students receive training in the adult and the child psychiatry divisions, while the senior cadets are assigned to the outpatient department for three-week periods. Students are given training in the neurosurgical service if they desire it.

Comments.—In summarizing the activities of the Illinois Neuropsychiatric Institute, it may well be said that all who worked to establish it should be more than gratified by the present organiza-

tion. As a teaching unit the Illinois Neuropsychiatric Institute offers a most thorough and comprehensive curriculum to physicians, to interns, and to students of nursing and social service. Its close relationship with the Institute for Juvenile Research permits inclusion of this relatively new field of child psychiatry into its program. Its staff is of highest caliber, and the joint sponsorship of the project by the College of Medicine of the University of Illinois and the Illinois Department of Public Welfare is apparently harmonious.

Its inpatient facilities are admittedly small and are not being utilized to the fullest extent of their potentialities because of the shortage of funds and personnel. This condition is unfortunate, and every attempt should be made to alleviate it. According to the annual report of the director, funds for adequate support of the work of the Illinois Neuropsychiatric Institute are not available from the appropriations made by the Illinois Department of Public Welfare and the University of Illinois, but fortunately grants from the Rockefeller Foundation, the Josiah Marcy, Jr., Foundation, the Scottish Rite Masons, and private contributions have augmented the state and the university funds. The annual report also points to the need for development of both inpatient and outpatient services.

Plans for a new institution have been drawn up which would offer intensive treatment facilities, including ambulatory care of borderline cases, and thus serve a prophylactic purpose by decreasing admissions to the already overburdened state mental hospitals. The Illinois Department of Public Welfare will provide the building, equip and supply it for all purposes, including maintenance, and supply the nursing services and all other building maintenance services.

It is the general acknowledged opinion that more emphasis on prophylaxis of mental disorders should replace the unending appropriations for care of mental patients in institutions where relatively little in the line of therapy is available because of the shortage of trained personnel.

STATE MENTAL INSTITUTIONS ACCEPTING RESIDENTS OF THE CHICAGO-COOK COUNTY AREA Illinois has nine state mental hospitals and two institutions for mental deficiency. The nine mental hospitals in the state had a patient population of 32,000 in January, 1945, better than 32 percent of the patient load in all the hospitals in the state at that time. From admission rates it is calculated that one new

patient is admitted to a state mental hospital every hour of the day and that, in addition, one patient is admitted to one of the two schools for mental deficiency during every eight-hour period.

Overcrowding.—The population of the nine state mental hospitals has risen from 21,000 in 1930 to 32,200 in May, 1946. The persistent annual increase in these institutions has not been met by a proportionate increase in the housing facilities. As a result, it is estimated that the eleven hospitals for mental illness and mental deficiency, with a capacity of approximately 27,400 beds, but with 41,200 patients, are overcrowded to the extent of 13,800 patients.¹

Another factor contributing to the tremendous problems faced by the state hospital system is the care of the aged and their ever-increasing numbers as a result of the continuing extension of life expectancy rates. The state hospital burden in this respect can be expected to increase proportionately from year to year and to present new problems to the already strained nursing services.

Finances.—The budget allotted the Illinois Department of Public Welfare for the 1945–47 biennium for the nine mental hospitals and the two state schools amounted to approximately \$39,000,000. This amount does not include new construction or major repairs and is an increase of approximately \$9,000,000 over the previous biennium. Per capita costs in the mental hospitals have increased each year from \$332 in 1942 to \$392 in 1944. In the two state schools it has increased from \$264 in 1942 to \$319 in 1944.

Personnel.—In 1945 the institutions had from 50 to 60 percent of the personnel required to meet the American Psychiatric Association's standards. In the national figures on patient load per employee for the year 1943, Illinois ranked fifteenth. It varied from thirteenth to twentieth in patient load for doctors, dentists, nurses, and nursing attendants. It is estimated that to bring personnel standards up to the American Psychiatric Association standards would necessitate a \$16,000,000 increase per biennium in appropriations.

There were 131 physicians on duty on March 1, 1946. The department states that twenty-two doctors could be placed immediately if they were obtainable. Complaints are made that the present high salaries offered by other government agencies have attracted many of

¹ Figures on bed space and overcrowding were compiled by the Illinois Department of Public Welfare, based upon the population of the eleven Illinois institutions as of May 1, 1946. These requirements were based upon 75 square feet of floor space per bed as mentioned by the *Public Health Manual for State Institutions* for patients over 16 years of age and 60 square feet of floor space for patients under 16 years of age.

the men who might otherwise have been interested in the state service. An elaborate program for psychiatric residencies in the state hospitals in conjunction with the psychiatric department at the Illinois Neuropsychiatric Institute has been formulated in an attempt to augment the state hospital staff, but to date the desired number of applicants has not been obtained. The program appears to be all-inclusive. It is recognized by the American Board of Psychiatry and Neurology and will utilize the teaching facilities of the Illinois Neuropsychiatric Institute for a portion of the three-year period. It is most unfortunate that these positions are not filled, in view of the present shortage of psychiatric personnel.

Patients from the Chicago-Cook County area.—The patient populations in four mental hospitals, Chicago State, Elgin State, Kankakee State, and Manteno State, are composed predominantly of persons from Cook County (including Chicago). Overcrowding in the four state mental hospitals is as follows: Chicago State, with a census of 4,605, overcrowded by 1,848; Elgin, with a census of 5,204, overcrowded by 2,167; Kankakee, with a census of 3,954, overcrowded by 1,561; Manteno, with a census of 6,509, overcrowded by 1,478. The combined census of the Lincoln and Dixon institutions, which care for many Chicago cases, is 9,035, with a combined overcrowding of 2,681.

It is estimated that Chicago-Cook County residents constitute 99 percent of the population of the Chicago State Hospital and 90 percent of the patients in the other three hospitals. There are approximately 20,000 patients in these four institutions at this time, an overload of more than 7,000. Estimates by the department indicate the need of new buildings for the over-all program for at least 14,000 patients. Appropriations for this purpose are not existent at this time, and since the state must accept all applicants for admission the present overcrowding will continue to increase. The present biennial appropriation for construction will not care completely for the expected increase, to say nothing of ameliorating the problem of overcrowding now existent.

The Chicago State Hospital.—The work of this hospital, because of its location within the Chicago-Cook County area, will be reviewed as typical of the mental hospital facilities and services available to residents of this area. The three other mental hospitals serving Cook County have much the same organization and most of the same problems, though the Chicago State Hospital, because of its

proximity to the University of Illinois College of Medicine, offers certain services the others do not.

The Chicago State Hospital accepts all types of mental patients, including drug addicts and alcoholics. In May, 1946, the bed capacity was said to be 2,757, but the census showed 4,605 inmates, or more than 60 percent overcrowding. Some of the reasons for the overcrowding are directly the result of its unique position in the system. It is, first of all, situated in the metropolitan area, and it receives all infirm cases. Relatives request that members of their families be hospitalized there because of its accessibility. The proportion of voluntary commitments is higher than in other institutions, especially among the alcoholic group. It serves as a temporary detention unit for patients from other state hospitals who are to receive treatment at the various facilities in the city. It is an assembly point for state deportation cases. Finally, it accepts "positive spinal cases" for fever therapy.

Chicago State Hospital is approved for residencies in psychiatry by the American Medical Association and the American Board of Psychiatry and Neurology. It has a school of nursing, which is a part of the Illinois School of Psychiatric Nursing. The per-capita cost for maintenance of patients was \$358 in 1944 and \$399 in 1945. The state assumes the entire cost of maintenance.

The staff at the present time consists of 9 psychiatrists, 12 physicians, and 2 residents. In the nursing service, there are 9 supervisors and 21 nurses. There are 2 social workers, 6 occupational therapists and 6 aides, 1 physical therapist, 13 hydrotherapist, 8 supervisors, 4 nursing assistants, 272 attendants, and 68 affiliate student nurses.

In 1940 there were 1,486 admissions, 1,290 of them admitted for the first time, and 812 discharges. In 1945 there were 1,417 admissions, 1,079 of them first admissions, and 696 discharges. The census of May 8, 1946, including patients on parole, was 5,022; committed 4,885, voluntary 132, mittimus 5.

Examples of ward overcrowding taken at random from the ward census sheets show one ward with a capacity of 114 housing 200 patients, another with a capacity of 90 housing 150. On some of the more disturbed wards, it is necessary for patients to be taken from beds and given pack or tub treatments so that other patients completing their hydrotherapy may have beds.

Ninety percent of the patients admitted to the institution on committed status come from the Cook County Psychopathic Hospital,

from which patients are picked up by the ambulances of the Chicago State Hospital three times a week.

Division of medical and surgical social service.—This division of the Illinois Department of Public Welfare carries the social work for all mental institutions in the state. In 1928 the state was "zoned" for social service, with each hospital responsible for a specified area. The social service unit at the Chicago State Hospital managed the Cook County area. In turn, Cook County was zoned into districts, and workers were assigned to each.

The chief of the Division of Medical and Surgical Social Service of the Illinois Department of Public Welfare is responsible directly to the deputy director of the Division of Medical Care and Treatment of the department. The chief social worker for the Cook County area, while responsible to the social service division chief, is responsible also for her outpatient cases to the director of the Chicago Community Clinic and for supervision of Chicago State Hospital cases to the superintendent of that hospital. There are 16 workers in her department, 1 directly responsible for the intake work at the Chicago State Hospital and the others assigned to the zones throughout the Cook County area. Two chief social workers at the Chicago Community Clinic are also responsible to the chief social worker of the Cook County area, one in charge of hospital and nonveteran cases, the other in charge of all work for veterans, including the outpatients of the Chicago Community Clinic and the inpatients of the Veterans' Rehabilitation Centers.

The supervisor of the placement service in the area for the Lincoln and Dixon Schools is responsible directly to the chief of social service and also to the superintendents of the respective schools.

Arranging for the return of paroled patients to their homes and facilitating their adjustment are the main social service activities at present. The monthly case load averages 125 to 130 patients. In addition, commitment hearings in the county court number nearly 300 weekly.

The students of the University of Chicago School of Social Service Administration are included in the over-all program and assigned proportionately to the various supervisors. The present program is attempting to concentrate on the treatment aspects of a controlled therapy program. The chief work done along these lines with students is at the Chicago Community Clinic, where sufficient and competent psychiatrists are available to maintain this program.

The social service division, though hampered by a shortage of personnel and a tremendous case load, plays an important part in the efficient administration of the total psychiatric service. The present plan of organization appears to have co-ordinated a program previously quite decentralized. The chief shortcoming seems to be the lack of competent psychiatrists to supervise and to guide students. A good teaching clinician is needed especially at the Chicago State Hospital to work with the social service supervisors in the training of students. Only recently, the hospital lost the services of a rather talented psychiatrist who had carried this type of work because "there is no allowance in the budget for a part-time psychiatrist." His resignation had a rather disillusioning effect upon the supervisors and a consequent deleterious effect on the program as a whole.

CHICAGO COMMUNITY CLINIC AND VETERANS' REHABILITATION CENTER The Chicago Community Clinic resulted from the reorganization in 1943 of the five clinics operated in the Chicago area by the state mental hospitals serving this area. It was designed originally to serve all residents of the Cook County area discharged from the state mental hospitals. Its program was later expanded to include precommitment services, "psychiatric services" to the community as a whole, and, during the war, a rehabilitation service established for 4F cases with psychiatric disorders referred from the Selective Service Boards (and later for veterans). In 1944 it was placed under the direction of the superintendent of extramural care, and in 1945 it became a part of the newly created Division of Community Clinics.

In addition to the services offered at the Chicago Community Clinic, all state hospitals have their own outpatient clinics. The Chicago State Hospital has a regular clinic meeting Saturday afternoons, with one psychiatrist and a social worker and an average of forty patients. Some of these patients are seen weekly, all at least once a month.

During the period when the five individual clinics were operated, psychiatrists from the state mental hospitals interviewed the post-commitment patients from their institutions at these clinics. This practice was continued when the Chicago Community Clinic was first organized, but has been given up by all but the Manteno Hospital. Its revival is contemplated, however.

The Veterans' Rehabilitation Center is an outgrowth of the service for veterans started in the fall of 1943 by the Chicago Community Clinic to provide psychiatric evaluation and psychotherapy to vet-

erans discharged from the Armed Forces for psychiatric disorders. Both the Chicago Community Clinic and the Veterans' Rehabilitation Center are located in the same building and function in a closely associated relationship, although each unit has its own director. The programs of the two divisions will be discussed separately, but information about the professional staff and statistics will be combined.

The Chicago Community Clinic.—In addition to the precommitment and postcommitment services already described, the facilities of the Chicago Community Clinic are open to completely discharged state hospital patients who apply for care voluntarily. A number of veterans' wives and other members of veterans' families are cared for also. Individual and group psychotherapy is provided. A psychiatric consultation service is offered to clients of agencies in the community unable to make other arrangements. Within the limits of its capacities, psychiatric service is provided for some of these referred cases if they cannot afford private care. The requests for care at the Chicago Community Clinic increase continually.

The clinic is used for teaching by the University of Illinois College of Medicine, the University of Chicago, and Loyola University School of Social Work. A rather close but unofficial relationship exists between the clinic and the Michael Reese Hospital since many of the clinic psychiatrists are also on the Michael Reese staff.

The clinic was the first in Chicago to undertake treatment for veterans under contract with the Veterans Administration and still does the majority of this type of work in the city.

The Veterans' Rehabilitation Center.—After the Chicago Community Clinic expanded its service to include veterans, the case load increased so tremendously that finally appointments were two months in arrears. In July, 1944, the Illinois Department of Public Welfare set up the night clinic for veterans according to plans drawn up by a joint committee of interested groups. Ten psychiatrists, and later more, served in the night clinics. The case load, however, continued to increase, and another huge backlog of patients awaiting treatment resulted. An inpatient service was established in October, 1944.

Because of the extended period of time between the referral of a patient and the beginning of treatment, the equivalent of a full-time psychiatrist was assigned to see prospective patients and determine their suitability for either inpatient care or outpatient psychotherapy. At present there is a lag of four to six weeks in assignment to

outpatient care, in spite of the increase of the night clinic staff to fourteen doctors and other large increases in the staff of the day clinic. No such lag exists in the inpatient services, and in emergencies patients may be admitted immediately.

The services offered include psychotherapy, group therapy, recreational therapy, electric shock therapy, and prolonged narcosis. Arrangements have been made with other psychiatric and medical services in the city for X-rays, encephalograms, and other necessary medical services.

The Veterans' Rehabilitation Center accepts any veteran honorably discharged, regardless of residence. The majority of the cases, however, are from the Cook County area, and most of the "down-state" work is largely consultation service for the various agencies in those areas. All service is free. At the time the survey of mental hygiene facilities was made, the Illinois Department of Public Welfare was in process of establishing veterans' rehabilitation centers with outpatient departments in other parts of Illinois.

The combined professional staff.—Each division has its own director. In addition, there are 3 full-time psychiatrists, 2 half-time psychiatrists, 1 full-time psychologist, 4 psychologists serving one-half day each a week, 2 chief social workers, 2 associate social workers, and a clinic manager. The night clinic staff consists of 20 part-time psychiatrists, 5 of whom serve two nights a week and the others one night, 3 part-time psychologists, serving two nights a week, and 1 part-time social worker serving one night a week.

The Veterans' Rehabilitation Center has, in addition to the general director, a director of the inpatient service who gives three to six hours a week. A full-time social worker, six nurses, and three occupational therapists also serve in the inpatient department. Two recreational workers and two physical therapists work under the direction of one full-time psychiatrist. Two part-time psychiatrists each give about one-half day a week.

The social workers of the Illinois Department of Public Welfare who serve the Cook County area were described earlier in this chapter. While most of them are on the pay roll of the Chicago Community Clinic, their chief responsibility is the supervision of patients discharged from the state mental hospitals who reside in Cook County.

Statistics.—It was impossible to determine exactly how much

work is done for state hospital patients and how much for veterans, but the following statistics are available. From the beginning of the clinic through April 15, 1946, 1,810 veterans were seen, 238 of whom were inpatient cases. Outpatient veterans totaled 1,572 (day clinic, 652, night clinic, 920).

During the past year more than 8,700 home visits were made to state hospital patients or for their benefit. No exact figures on social service activities were available. During April, 1946, the following number of patients were seen: state hospital patients on conditional discharge, 524; patients fully discharged from state hospitals, 28; Community Clinic cases, veterans, 643, nonveterans, 28.

The sources of referral for 1945 and early 1946 show considerable change from that of 1944. Red Cross referrals decreased considerably. The patients' own applications and referrals from the Veterans Administration increased markedly. About 50 percent were referrals from the Veterans Administration. It was recently estimated that about one third of these cases are on a contract basis, one-third are in the process of being adjudicated, and one-third are not connected with the service.

General comments.—The physical properties of the building which houses both the Chicago Community Clinic and the Veterans Rehabilitation Center are somewhat inadequate for the ever-increasing load. According to the director, appropriations are adequate for expansion, but difficulty in obtaining trained personnel has thwarted efforts in this direction to some extent. A considerable increase in recreational and occupational facilities is in process.

Certain organizations of the community have urged the establishment of a separate clinic for veterans entirely apart from one offering nonveteran community services. The prevailing opinion among psychiatrists, however, is that this separation is not advisable, since it would establish different locations for the treatment of the veteran and the members of his family. It has been indicated also that veterans are less reluctant to seek psychiatric care in a community organization serving all residents than in one exclusively for the care of veterans.

THE INSTITUTE FOR JUVENILE RESEARCH The Institute for Juvenile Research is devoted to the study, diagnosis, and treatment of behavior and personality disorders of children. It was founded in 1909, following the impetus given by William Healey's early work in

the Juvenile Psychopathic Institute. It is a state-wide organization serving as both a diagnostic and a therapeutic center for the traveling clinics functioning throughout the state.

The staff consists of the acting director, 10 full-time psychiatrists, 2 part-time psychiatrists, 1 "fellow," 11 full-time psychologists, 2 students, 10 full-time and 2 part-time psychiatric social workers, and 32 students from schools of social service.

Sources of referral.—Children under eighteen may be referred by any court, social agency, school, parent, or guardian in Illinois. During the past year parents continued to be the largest source of referral to the headquarters clinic, 53.6 percent, while the courts referred the next largest group, 20.4 percent. Social agencies referred 17.7 percent; health agencies, 5.4 percent; schools and other sources, 2.9 percent.

Procedure of referral.—The regulation application form is submitted by the referrer, giving the significant facts concerning the child's maladjustment. The application is reviewed by an intake committee consisting of the heads of each professional department. After determining what measures seem to be indicated, the committee assigns the cases to a member of the staff and schedules the appointment. The parents and the child are interviewed individually by the psychiatrist. Appropriate psychological testing is performed by the psychology department. A psychiatric social worker completes the environmental picture. Following these procedures the full staff of the institute reviews the case as a whole for diagnosis and makes plans for subsequent treatment.

In many cases the child's situation is ameliorated by a discussion with the parents to promote in them a better understanding of the causes underlying the child's maladjustment. In other cases changes of environment, for example, the school, grade, neighborhood, or social group, are recommended. If the child is referred by a court or by a social agency, the treatment advised is carried out by the court or by an agency worker, guided by conferences with institute staff members. In still other cases it is necessary to change the child's environment by placement with relatives, with friends, or in a foster home.

Inpatient services.—Selected cases of severe problems, chiefly chosen for teaching and research purposes, are admitted to a fourteen-bed ward on the sixth floor of the Illinois Neuropsychiatric Institute. The Institute for Juvenile Research supplies the profes-

sional services for this ward. These children range from three to eleven years of age. The ward is the only state facility for the treatment of normally intelligent children who present seriously handicapping neuroses or behavior disorders of prepsychotic or psychotic patterns.

The therapeutic goal of the inpatient service "is to effect such changes in the emotional adjustment of the individual child that in approximately a year he will be relatively happy and able to learn (i.e., assimilate new personality and intellectual growth material) in the environment of his own or foster home or standard type school." Children are given intensive treatment of all types during their hospitalization period, and a very selective type of personnel is used in the ward management. This unit is administered well and fully serves its purpose of teaching and research. However, the physical facilities of the inpatient unit are so limited that the part it plays in meeting this community problem may be considered almost negligible.

Another function of the Institute for Juvenile Research is promotion of education, both by training professional workers in the principles and techniques of child guidance and by educating parents as to the nature of their problems and the means for their solution.

Other activities.—A unit of the Department of Sociology of the University of Illinois, which occupies quarters at the Institute for Juvenile Research, is co-operating with the Chicago area projects in directing community organizations designed to combat delinquency in areas where it is most prevalent. The staff of this unit directs and advises various committees of lay people in the respective areas in the promotion of their community programs, but generally remains in the background as far as is feasible.

Statistics.—The latest figures available are those for the year ending June 30, 1944. During that time 3,039 children received diagnostic service, of which 1,226 were seen at the headquarters clinic in Chicago. It is reported that there is a progressive increase in the intake load of the headquarters' clinic, and at this time it is expected that these increases will become even more overburdening in the future. The case load in 1944 at the headquarters' clinic was nearly 50 percent greater than in 1941, while requests for extramural care had increased nearly 100 percent.

Delay in service.—Patients referred for diagnosis must wait thirty to sixty days because of the present backlog. Children needing

treatment also are compelled to wait two to three months if they are routine cases. Emergencies or children urgently in need of care usually are given priority on appointment schedules. Cases needing prolonged treatment by a psychiatrist seldom are accepted.

Cases which present problems most desirable for teaching and research are given priority. This policy, as is the case in all teaching organizations, is justified, at least partially, because of the urgent need for trained professional personnel in this field.

The experience of the Institute for Juvenile Research indicates that only 4 to 5 percent of the cases who must wait approximately eight weeks for appointments answer the follow-up letter telling the parents when they may bring the child to the institute. Since only one twentieth of those requesting service finally receive it, the case load is reduced considerably, but this reduction because of the delay in obtaining service emphasizes the deficiency in facilities.

It is the opinion of many in the field, however, that a "cooling off period" is rather important in meeting the problem of behavior disorders. It is felt that during this time an equilibrium may somehow be re-established, thus obviating the necessity for intervention by the psychiatrist. This opinion, however, does not appear to justify completely the deficiency in the present facilities. Reports from social agencies have shown that simple behavior problems among children whose parents have not responded to the "follow-up" letter have sometimes in the interval progressed to more serious antisocial difficulties.

The increased demands made upon the services of the Institute for Juvenile Research have been met to date because individual staff members accept far greater work loads than ever were carried previously. The present situation appears to have taxed the professional staff beyond their capacities. Further increases in the case loads could result only in a further impairment of the services rendered. Budget limitations preclude improvement of the staff in both number and quality. An added burden which serves further to aggravate the situation is the fact that service in the "downstate" clinics takes some of the psychiatrists, psychologists, and other trained personnel from headquarters. These staff members rotate in the "downstate" clinics.

Current problems and urgent needs.—The most urgent problem by far confronting the Institute for Juvenile Research is that of adequate remuneration for professional services. As is the case in most of the tax-supported psychiatric organizations, salary scales are

far below the standards of the American Psychiatric Association. The stipulated level of \$250 to \$325 per month for psychiatrist I, \$325 to \$400 for psychiatrist II, and \$400 to \$500 for psychiatrist III are unreasonably far below the standards which state that physicians, psychologists, and psychiatric social workers should receive "remuneration not less than the average income of such specialists in the area served."

The chief reason that the Institute for Juvenile Research has been able to maintain its present standards in spite of inadequate salaries is the general excellence of the working conditions and the general interest in the clinical material available. The workers in general are young, ambitious, and willing to sacrifice financial security temporarily to obtain a good foundation in their specialty. It is the general rule, however, that, upon achieving their purpose, these persons leave the organization to go into private practice or to other positions where the remuneration is considerably more substantial.

It has been the experience of several of the agencies referring children to the Institute for Juvenile Research that facilities for diagnosis there are fairly adequate, but that facilities for treatment of patients are definitely inadequate and have driven the various agencies to hire their own consultants independently. A greater part of the work of the Institute for Juvenile Research in solving behavior difficulties appears to lie in manipulating the environment of or attempting to modify the attitudes of the patients through case work techniques.

PSYCHIATRIC FACILITIES UNDER COUNTY OR CITY AUSPICES

The following facilities and services under either county or city control are available in the Chicago-Cook County area: (1) the Cook County Psychopathic Hospital; (2) the Psychiatric Institute of the Municipal Court of Chicago; (3) the Behavior Clinic of the Criminal Court; (4) the Psychiatric Department of the Juvenile Court of Cook County; (5) the Bureau of Child Study, Board of Education, City of Chicago.

COOK COUNTY PSYCHOPATHIC HOSPITAL This hospital serves both residents and nonresidents of Cook County. It may be described as a "clearing house" to the state hospital system for all psychiatric disorders in the Cook County area, since it serves as a diagnostic and an observation center for patients certified as in need of hospitalization for mental illness. It is operated and controlled by the Board of

Commissioners of Cook County and by the Chief Justice of the County Court of Cook County.

The hospital is approved for psychiatric residencies by the American Medical Association and the American Board of Psychiatry and Neurology. Four medical schools use the hospital for teaching purposes. A number of professors of psychiatry and neurology teach at the hospital and participate in research projects. Until recently the institution had a rather extensive research program, but recent pressure of work has necessitated its curtailment.

The building.—While the original capacity of the building was 175 patients, bed capacity is increased frequently by filling the day rooms with beds. The fourth floor of the building is occupied by the neurological service, a more or less autonomous division, where only neurological patients are domiciled. The fifth floor houses the occupational therapy department, some hydrotherapy facilities, clothing rooms, supply rooms, the office of the clinical psychologist, and certain other services.

The disadvantages of the present building, as outlined by the present officials of the organization, are: (1) It has outlived its usefulness as a unit, since its facilities are not adequate for present needs. Since it was built, in 1913, there has been no appreciable augmentation of its physical properties. (2) The large wards necessitate mixing the patients and rendering the desirable segregation of different types of patients impossible.

Staff.—In addition to the superintendent, the staff consists of an assistant psychiatrist for men, an assistant psychiatrist for women, 3 residents in psychiatry, and 5 interns. The interns are changed monthly and are part of the rotating intern service of the Cook County Hospital.

The attending staff of physicians is self-appointing. Selection of this staff by means of civil service examinations would assure higher efficiency and fairness.

The nursing staff consists of a director, 5 head nurses, 4 supervising nurses, and 13 registered full-time nurses. There are 138 student nurses who affiliate at the institution for short periods of time. These students are supervised by the head nurse and the supervising nurses.

The social service department consists of a director, 7 psychiatric social workers, and 6 clerical workers. There is, in addition, one occupational therapist responsible to the nursing department. The so-

cial service and nursing staffs are provided by the Cook County School of Nursing, a nonprofit organization under contract with the Board of Commissioners of Cook County.

The staff of 20 female and 32 male attendants is chosen by the Board of Commissioners of Cook County. The pay scale for the attendants is somewhat above that received by the average state hospital attendant and according to the director it has resulted in the employment of individuals of a definitely higher caliber, more stable and permanent.

Admission of patients.—Patients are brought to the institution on the certificate of a physician, and then the case is reviewed at a staff conference. The staff acts in an advisory capacity to the County Court. Patients are observed in the hospital until the findings can be reviewed by the court. One of the chief justifications for the existence of the institution is the availability of hospitalization on a psychiatric ward for patients awaiting commitment. In other areas the patient frequently is housed in the county jail or in a similar place until the commitment action has been taken.

Observation procedures.—The staff at the institution determines the mental status of patients and submits its conclusions to a commission appointed by the court which examines the records of the hospital and makes recommendations to the court. This commission is composed of two doctors, one of whom is a psychiatrist.

Some groups consider that the establishment of this commission under the recent revision of the Mental Health Act has served only to encumber the commitment procedures without having added materially to their general efficiency. Hospital personnel, however, consider it an improvement over the former law, which stipulated that a writ of commitment must be obtained before the patient could be hospitalized. In cases of emergency when patients were admitted at night, it was almost impossible to obtain this writ because the county offices were closed at that time. At present the patient may be admitted for observation on the certification of a physician.

All patients are now held about six days until their cases can be presented to the County Court, which holds regular meetings at the hospital to hear evidence and make disposition of cases. Following this hearing, the patients are committed to a state hospital, discharged outright, or returned to the care and custody of responsible parties. Some may be sent to voluntary or proprietary hospitals or to hospitals of the Veterans Administration. In these cases the new

law commits them to the responsibility of the Illinois Department of Public Welfare.

Whenever necessary, the social workers plan aftercare for patients, whether or not commitment is decided upon.

Statistics.—The average daily population for the year was 165, with an average stay of 6 days each. A certain number of patients used for teaching purposes are allowed to remain in the institution by courtesy of the court for periods considerably longer than the six-day period.

Comment.—It is the confirmed opinion of all familiar with the situation that there is a most urgent need for a new building to replace the present one. It is necessary from the point of view of both space and type of facilities. A 400- to 500-bed hospital where intensive treatment could augment the present activities and still permit adequate facilities for handling the present admission rate is indicated definitely. This type of hospital is contemplated by the Illinois Department of Public Welfare also. If the institution were under the jurisdiction of the state, it would be necessary, under the present law, to obtain commitments on all patients from the County Court of Cook County before they could be held legally. This difficulty would be obviated were the institution under county jurisdiction.

THE PSYCHIATRIC INSTITUTE OF THE MUNICIPAL COURT OF CHICAGO This agency is located in the Municipal Police and Courts Building. It is under the direct supervision of the Chief Justice of the Municipal Court and serves all the municipal courts in the city. It was established in 1914, and at that time it was designated as "The Psychopathic Laboratory of the Municipal Court." In 1925 the director and the staff were transferred to the Chicago Health Department; but in 1932 it was again separated from the health department to become an integral part of the court system of the city. At that time the name was changed to Psychiatric Institute of the Municipal Court of Chicago.

The staff consists of a director, three half-time psychiatrists, three psychologists, two psychiatric social workers, one clinic manager, and office personnel. The functions of the Psychiatric Institute are purely diagnostic, and, accordingly, the activities of the social workers are chiefly intramural. Their work consists of interviewing relatives of patients and preparing case histories. Recommendations are submitted to the Municipal Court, and patients are referred for hospitalization or outpatient treatment.

This year's budget of \$41,700 is for salaries only. All expenses are met from Municipal Court funds.

Sources of referral.—About 90 percent of the cases come to the Psychiatric Institute from the Boys' Court, the Women's Court, the Court of Domestic Relations, and outlying police courts. The remainder are referred by the Juvenile Protective Association and by other welfare agencies. A few patients come voluntarily.

About 50 percent of the cases referred to the Psychiatric Institute by the courts are returned to the courts as "not suffering from any condition serious enough to warrant classifying the offense as a symptom of mental disorder." No attempt is made to follow up such cases, although it is quite possible that some may develop mental aberrations of some type in the future. About one third of the cases referred are found to be clearly psychotic, and they necessitate referral to an institution for care and treatment. Such cases usually are certified to the Cook County Psychopathic Hospital. About 5 percent are classified as feeble-minded and are committed to the Lincoln State School or to the Dixon State Hospital. The remainder of the "positive cases" are referred usually to the clinic of the Illinois Neuropsychiatric Institute or to Northwestern University. Occasionally they are sent to the clinics at Michael Reese or Billings hospitals, if they have been patients there previously.

At present there is no serious backlog of patients, and diagnostic services usually are completed in one day. If further information or observation of a patient is necessary, as occasionally occurs, the patient is detained in quarters under surveillance at the Municipal Police Building.

Routine of clinic.—The patient is admitted because of a police officer's report, examined by the psychologist, and a social history is obtained from the relatives. This information is referred with the patient to the psychiatrist. A final report is transmitted to the clinic manager, who, in turn, reports the institute's findings to the court.

The administration of the Psychiatric Institute believes that there is urgent need for larger physical properties and more personnel and equipment. Electroencephalographic facilities are nonexistent at this time, and they are required to facilitate the diagnosis of certain types of cases.

Statistics.—The latest figures available are those for the year 1944. During this year 2,717 new cases were received by the Psy-

chiatric Institute. Of this number, 859 were certified to the Cook County Psychopathic Hospital as psychotic; 82 were sent to the Dixon State Hospital as feeble minded; 213 were recommended for psychiatric supervision at the psychiatric clinic in one of the university hospitals. The incidence of alcoholics among cases referred during the year was 21 percent.

At the present time the institute appears to be functioning in an efficient and co-ordinated manner. In view of the expected increase in the number of referrals, the Psychiatric Institute's request for an increase in physical properties and personnel appears justified and warrants consideration. The necessity for maintaining the integrity and the efficiency of this clinic is obvious. The high percentage of the patients referred to the Psychiatric Institute who were found to be insane and were accordingly certified to institutions has undoubtedly more than balanced the present expenditure for its maintenance by obviating endless court procedures. Lack of treatment facilities and the inability to follow the cases after the original service should not be considered deficiencies in this agency. The sole purpose for its existence appears to lie in its consultant capacity to the courts. The other functions are the responsibilities of other psychiatric facilities in the area.

THE BEHAVIOR CLINIC The Behavior Clinic was created by the Board of Commissioners of Cook County in 1931 as a part of the Criminal Court. It is under the Cook County Bureau of Public Welfare. It was set up at the suggestion of the Chicago Bar Association, a committee of judges, and the Institute of Medicine of Chicago. It is located in the Criminal Court Building. The immediate reason for its establishment was the increasing tendency toward admission of psychiatric testimony by both the defense and the prosecution. Its purpose at present is to advise the bench as to the exact mental status of individuals referred to it by the court. Theoretically, it is unprejudiced, and the reports are completely impartial. Its staff consists of a director, who serves half-time, another half-time psychiatrist, a full-time psychiatric social worker, and a part-time psychologist.

Following referral of an individual to the Behavior Clinic, a complete examination, physical, psychiatric, and psychometric, is made, together with a social history. A copy of the findings usually is submitted to the court and to the defense and the prosecution attorneys.

Courtesy service in the clinic is offered to the judges of the Fed-

eral Court and also to the justices of the peace and the police courts of outlying Cook County districts without psychiatric facilities. No cases are accepted that come under the jurisdiction of the Municipal Court, since their handling is a function of the Psychiatric Institute of the Municipal Court. Parents of delinquent children held by order of the Juvenile Court are frequently referred to the clinic for examination.

Services of the clinic are also available to the judges of the Superior Court. The clinic avoids these cases as much as possible, because of its limited facilities for handling lengthy investigations such as those concerned with divorce. All material obtained on individuals is confidential and is submitted for examination only when actually subpoenaed.

Recent statistics indicate the usual case load to be around 350 cases a year, of which 5 percent are Federal, 40 percent from the Criminal Court, and the rest scattered among other groups. The director estimates that 500 cases will be seen in the clinic this year if the volume continues to average that of the first five months of the year.

The functions of the Behavior Clinic are almost entirely diagnostic. Treatment facilities are not available. An occasional case referred to it by the Criminal Court for psychiatric supervision has proved that procedure to be quite unsatisfactory, since the Behavior Clinic has no legal jurisdiction over the patient if he refuses treatment.

In the opinion of those familiar with the situation, all sex offenders should be examined by the Behavior Clinic on their first offense. However, facilities are not adequate to handle the volume of these cases, even were the judges to order examinations. In view of the obvious increase in requests for the Behavior Clinic's services, expansion of facilities is definitely indicated. The present budget of the clinic is \$5,000 below that of the 1931 level, when the case load was appreciably less.

THE PSYCHIATRIC DEPARTMENT OF THE JUVENILE COURT OF COOK COUNTY This department, located in the Juvenile Court Building, originated in the Juvenile Court Division of the Institute for Juvenile Research. It is now separated completely from the latter agency, except that two of its staff members are paid from institute funds. The rest of the pay roll is financed by the Board of Commissioners of Cook County.

The Psychiatric Department is responsible directly to the judge of the Juvenile Court and accepts only cases referred by this judge or by his appointed workers. Cases served by the department are divided roughly into two groups: maladjusted children, many of whom are either prepsychotic or psychotic (this group is the larger), and feeble-minded wards of the court, to whom the department devotes two days a week. Included in the second group are some adults on parole from the state institutions for mental defectives and others adjudged feeble-minded who are being given a further trial by being allowed to live in the community before being sent to an institution.

Type of services provided.—Persons referred to the department usually have had their social histories taken by the probation officers. If necessary, additional information is obtained by the social workers on the department staff. Psychiatric examinations and psychometric tests are made, and the patient is then reviewed by the entire staff of the department for diagnosis and recommendations. By special agreement the Institute for Juvenile Research makes electroencephalographic studies of certain patients. Finally, the summary with recommendations is submitted to the Juvenile Court Judge.

Recommendations include outpatient treatment and institutionalization. Some are dispositional only, when no adequate facility exists for treatment of the children in the community. In a few isolated cases, approximately eight to ten children, treatment has been attempted by the staff psychiatrist. Results of these endeavors have been most encouraging, but any expansion of this aspect of the Psychiatric Department's work is precluded by both the present administrative policy and the physical inadequacies of the department. In the opinion of the director expansion of the department is urgent at this time in order to provide greater opportunities for treatment.

The Psychiatric Department of the Juvenile Court has been used as a teaching facility by the University of Illinois College of Medicine and by the Department of Psychology of the University of Chicago. At the present time, little teaching is done, but a resumption is expected in the near future. Two research projects, one on problem children, the other on mental defectives, are in progress at this time.

Statistics.—About 1,300 to 1,400 children have been cared for

annually for the past few years. Some increase in the case load is expected in the immediate future.

Comments.—Two striking deficiencies are apparent concerning this agency. The first, not directly its problem, is the gross inadequacy of hospitalization and care of juvenile psychotics. It is stated that since severely maladjusted adolescents and psychotics cannot be handled by the inpatient unit of the Institute for Juvenile Research, such cases frequently are neglected. On occasion, some cases are referred to the Illinois State Training School for Boys, the State Training School for Girls, or even to adult penal institutions. Many of these cases, it was felt, could have been handled much better in a psychiatric institution for children had such an institution existed.

The other shortcoming is its lack of treatment facilities. It is not certain whether the primary purpose of the department's work is diagnosis, or whether increased facilities for therapy should be added. Since cases sent to the Psychiatric Department are under the direct supervision of the Juvenile Court and accordingly are known to workers in the Psychiatric Department, it might be more constructive for the department to provide therapy for these cases than to refer them for this type of care to the Institute for Juvenile Research. Cases necessitating immediate therapy certainly should be cared for directly by the department because of the overcrowding of the Institute for Juvenile Research and the consequent delay in obtaining appointments. In this case, obviously increases in both physical properties and professional personnel are indicated.

THE BUREAU OF CHILD STUDY, BOARD OF EDUCATION, CITY OF CHICAGO The Bureau of Child Study is an integral part of the public school system of Chicago. This unit is responsible for training "adjustment teachers," who are selected by the principals of the various schools, subject to approval by the superintendent of schools and the Bureau of Child Study. The function of the adjustment teacher is to help the regular teachers to understand the problems of the children and assist in solving them. Each school has at least one adjustment teacher; some of the larger schools have two. While the adjustment teacher usually refers cases to the Bureau of Child Study, a principal, a teacher, or a parent may make a referral. Sometimes a child himself goes directly to the bureau. In 1945 more than 10,000 children were studied.

A psychologist is in charge of the Bureau of Child Study, and the professional staff consists of 1 psychiatrist (part-time), 65 trained

psychologists, and 5 other teacher-counselors. A clinic is held at the central office of the Bureau of Child Study two days weekly for the examination and treatment of children referred from the regular elementary schools. Records kept on each child include reports from his regular teacher and the adjustment teacher, the results of a psychometric examination, a social history, and reports by the psychiatrist if he has examined the child. If psychiatric treatment is indicated, cases are referred usually to psychiatric clinics throughout the city, and at times there has been considerable difficulty in making these referrals. The Bureau of Child Study has at present no facilities for follow-up care of cases recommended for psychiatric treatment.

Special psychiatric clinics are held at three special schools for children with serious behavior problems, Montefiore, Mosely, and the Chicago Parental School. There are 1,400 children in these special schools. Successful rehabilitation through solution of behavior problems is said to be achieved in about 90 percent of the children. The criterion of this success is the child's harmonious return to his old school and the averting of difficulties which would have led to his appearance at the Juvenile Court.

The relationship of the Bureau of Child Study with the Institute for Juvenile Research and the Juvenile Court is described as on a "friendly basis." The Juvenile Court sets aside Thursday of each week for the prosecution of cases referred by officials of the Bureau of Child Study.

The Chicago Parental School receives children only upon commitment by the Juvenile Court for a minimum period of twenty-eight days. The ordinary duration of residence, however, is three to four months. The child then may be paroled back to his old school for a period of a year after his discharge from the Chicago Parental School. The Bureau of Child Study points out that one of the chief difficulties in a rehabilitation program of this type is the necessity, in most cases, of returning the child to his old school, with the environmental factors which excited his original behavior difficulties.

A serious criticism of the program of the Bureau of Child Study is that it puts too much emphasis upon psychological testing. Available data indicate that it is essentially a psychological testing agency. While psychological testing and the work of the adjustment teacher are essential for successful maintenance of scholastic standards, a

definite expansion of child guidance facilities with special emphasis on the psychiatric aspects is needed also. One part-time psychiatrist cannot handle even a small fraction of the psychiatric problems which must exist in the total public school population of Chicago. Unquestionably, there is a deficiency of trained psychiatric personnel, and many more children are falling into the "lost" category so far as serious behavior problems are concerned than should be the case. Since these problems arise immediately within the schools, it would seem reasonable to have the child guidance organization intimately correlated with the school system rather than a unit entirely apart and used only for referral.

In fact, the outstanding deficiency in the school system appears to be the lack of visiting teachers, whose positions were eliminated in the early thirties as part of a general economy program. The "parent's interview" which has been substituted for the visiting teacher's visits, does not in the smallest degree meet the need. The duties of the adjustment teacher are so specific that she is unable to serve in the capacity of the visiting teacher. Some members of the social agency group, in expressing their regret that the visiting-teacher program has not been reinstated, point out that a number of children in orphanages or whose homes have been broken could be handled in the ordinary school with the aid of a good visiting teacher and an understanding regular teacher. Many of the referrals to the parental school could be obviated by better knowledge and control of the home environment through the medium of the visiting teacher.

PSYCHIATRIC FACILITIES UNDER THE VETERANS ADMINISTRATION

Estimates based on a survey of a cross-section (10 percent) of the veteran population in the Chicago area indicate that approximately 15,000 veterans (or 2 percent of the total number) are in need of some type of psychiatric care. The facilities provided by the Veterans Administration for the care of veterans in the Chicago-Cook County area with psychiatric disorders are as follows: (1) a mental hygiene clinic located in the Veterans Administration regional office in downtown Chicago; (2) services at Hines and Vaughan Hospitals; and (3) mental hospitals under the Veterans Administration which serve the Chicago-Cook County area.

THE MENTAL HYGIENE CLINIC OF THE VETERANS ADMINISTRATION This clinic was initiated in the spring of 1946 and was

planned as a large separate unit to provide an active treatment program for all types of psychiatric disorders. The professional staff was to consist of a director, 6 to 8 full-time psychiatrists, 14 part-time psychiatrists for a minimum of three night clinics weekly, a number of full-time psychologists, a chief social worker, and 4 other psychiatric social workers. Inability to obtain a large enough professional personnel appears to have interfered with the execution of this program. Activities at the time this report was written consisted largely of a consultation service with other Veterans Administration facilities and the approval of cases for referral to the contract clinics (outpatient and inpatient services at Michael Reese Hospital and the Chicago Community Clinic). Cases are referred also to private physicians. The social service needs of the mental hygiene clinic are handled on a more or less courtesy basis by a Veterans Administration social service division located in the same building with the clinic, which investigates cases of a psychiatric nature for the Claims Division of the Veterans Administration and for one of the outlying V.A. mental hospitals.

Records indicate that 80 cases were handled. Of these, 49 were referred elsewhere for psychiatric care, 6 were classified as "pending," 2 were "withdrawn," 7 were "closed after brief service," and 6 were carried under active therapy. It is felt generally that the potentialities of this clinic could and should be utilized much more than they have been to date. The psychiatric personnel of the clinic and not the admitting clerk should be responsible for determining the psychiatric needs of the veterans who apply and for deciding whether or not they are service-connected. Contract agreements with outside agencies which treat these veterans are delayed, and the outside clinics report that they treat many veterans without reimbursement. For others, reimbursement comes only after a lapse of several months.

SERVICES AT HINES AND VAUGHAN HOSPITALS Hines Hospital plans a two-hundred-bed hospital for the care of psychosomatic cases and outpatient services. The physical facilities exist, and the process of organizing professional services is under way. This program will to a large extent replace the present use of part of the Hines Hospital facilities as a temporary detention quarters for patients awaiting transfer to other mental hospitals and the examination of Hines Hospital patients by psychiatrists on a consultation basis.

A "neurosis center" at Vaughan Hospital with two double wards

in which intensive treatment can be given to psychoneurotic patients also is planned.

MENTAL HOSPITALS UNDER THE VETERANS ADMINISTRATION The two principal Veterans Administration mental hospitals which serve veterans of the Chicago-Cook County area are located at Downey and at Danville. The Veterans Administration also has made contractual agreements with the state of Illinois for care of veterans in the Elgin, Manteno, and Kankakee state mental hospitals.

MENTAL HYGIENE IN NONGOVERNMENTAL INSTITUTIONS AND AGENCIES

by *James R. Hurley, M.D.*

CHAPTER 28 DESCRIBED THE WORK of the mental hygiene agencies under governmental control. This chapter will take up the mental hygiene activities of voluntary hospitals and clinics, of sanatoria and rest homes, of the Illinois Society for Mental Hygiene and other social agencies, and of schools for problem children. There is also a brief discussion of the psychiatrists and physicians interested in psychiatry who are located in the Chicago-Cook County area.

VOLUNTARY FACILITIES PRIMARILY FOR PSYCHIATRIC TEACHING

The psychiatric services at the following institutions were established primarily for the teaching of medical students: the University of Chicago Clinics, Montgomery Ward Clinics of the Northwestern University Medical School, Wesley Hospital, and the Institute for Psychoanalysis.

UNIVERSITY OF CHICAGO CLINICS The University of Chicago Clinics is an integral part of the University of Chicago and is staffed by members of the faculty of the university's medical school. It is approved for psychiatric internships and residencies by the American Medical Association and the American Board of Psychiatry and Neurology. Psychiatric services are provided in the general unit (Albert Merritt Billings Hospital) and the children's unit (Bobs Roberts Memorial Hospital for Children). Teaching and research are the primary concern of the two psychiatric services.

Specialized training is available to undergraduates of the university, second-, third-, and fourth-year medical students, to undergraduates from the School of Social Service Administration of the University of Chicago, and to residents in psychiatry. At present, ten students from the graduate School of Social Service Administration work in the psychiatric clinics each quarter.

Outpatient services.—Clinics for adults and for children up to eighteen are scheduled for 51½ days each week. In 1945, 595 adults and 278 children were admitted. Clinic visits, many served by psychiatric social workers only, totaled 3,449. No restrictions are placed on applicants to the outpatient services from the point of view of symptomatology, income, or source of referral. Cases selected for therapy are usually those valuable from a teaching and research standpoint and with good prognoses. Parental treatment is included with most of the children's cases, and the average period of treatment is one interview per week for a period of one year.

Inpatient services.—The service for adults is limited to 11 beds, in 3 private rooms and 4 semi-private rooms. When the unit was opened, in 1935, it was one of the first inpatient psychiatric services to be established as an integral part of a general hospital. Treatment was given to 175 patients in 1945.

The average daily census was 9.8 patients. Patients are accepted from the general services at the University of Chicago Clinics and on referral from both the hospital staff and physicians in private practice. All inpatients are chosen primarily for their value in teaching and research. Since intensive treatment is given, only those are accepted who will respond to this type of treatment. Acutely disturbed persons, paralytics, and usually the chronically ill are excluded. The therapy consists of hydrotherapy, electric shock therapy, occupational therapy, and prolonged narcosis. Room rates depend upon the economic resources of the patients and range up to \$63.00 weekly for private rooms and \$52.50 for the semi-private accommodations.

The Bobs Roberts Memorial Hospital for children maintains no separate psychiatric inpatient service. The infrequent anxiety cases, feeding problems, cases of enuresis, and young psychotics are cared for in the general pediatric wards.

The research facilities closely associated with the psychiatric inpatient unit of the University of Chicago Clinics are active, and a more or less constant program is in progress. Continuation and augmentation of this program is contemplated.

Staff.—The psychiatric staff consists of 1 full-time professor, 3 associate professors, 4 assistants, and 2 residents (on two-year appointments). The inpatient service is carried by the professor of psychiatry, 1 of the associates, and the 2 residents, assisted by 2 full-time psychiatric social workers, 5 graduate psychiatric nurses, 3 attendants, 1 hydrotherapist, 1 occupational therapist, and 1 recre-

ational therapist. The 3 therapists work only part time. All the psychiatrists serve in the outpatient clinics, together with 3 psychologists, 4 social workers, and a large student group.

The psychiatric unit at the University of Chicago appears to be utilized to full capacity. It is serving a useful purpose in view of the present demand for trained psychiatric personnel. While its inpatient service obviously can play only an extremely small part in alleviating the general needs of the community for this type of care, expansion of service would probably result in the sacrifice of its teaching efficiency.

MONTGOMERY WARD CLINICS AND WESLEY MEMORIAL HOSPITAL
The psychiatric services provided by these two institutions are under the direct jurisdiction of the Northwestern University Medical School. Inpatient psychiatric services are provided at Wesley Memorial Hospital, and the outpatient psychiatric services at the Montgomery Ward Clinics. The psychiatric unit at Wesley Memorial Hospital is approved by the American Medical Association, and the American Board of Psychiatry and Neurology for satisfactory one-year training of residents. Undergraduate instruction of the medical students consists of didactic teaching through the four-year course, together with clerkships in the inpatient service and assignments in the clinic. The unit appears to be working efficiently in this respect under the supervision of the staff psychiatrists.

Outpatient services.—It is estimated that the clinic serves about 250 new cases a year, who make approximately 1,454 visits (these estimates are based on 1944-45 statistics). There are said to be more neurological than psychiatric cases. The clinic medical staff consists of 11 physicians, some with interests chiefly in the field of neurology, others, chiefly interested in psychiatry, 1 fellow, and 1 part-time psychologist. The fellow serves 4 to 5 afternoons a week. The other physicians are usually present once a week. Each physician instructs from 6 to 8 students. Psychiatric work is limited almost entirely to diagnosis. Pressure of work is said to prevent any continued treatment. There is no differentiation between new patients with psychiatric and neurological complaints in assigning them to the clinic physicians.

Although theoretically the clinic serves the Chicago area, most patients come from rather near-by homes unless they are referred by private physicians. Cases requiring hospitalization are referred to the Cook County Psychopathic Hospital. In the opinion of clinic work-

ers, this fact somewhat limits the potentialities of the clinic service. Social agencies refer relatively few cases because of the restrictions and the inefficiency of follow-up treatment.

Inpatient services.—This service consist of a thirty-three-bed locked ward in Wesley Memorial Hospital. Only white adult private patients are accepted, although occasionally a child is referred by the pediatric department. During the first six months of 1945, 152 patients were cared for. Rates in 1944 ranged from \$5.50 to \$8.00 a day, but are said to be somewhat higher now. No free beds are available.

The inpatient staff consists of the chief of the service, the professor of psychiatry at the medical school, a visiting psychiatrist, and a consultant. There is one resident assigned to the service for a four-month period; one intern for a one-month period; and a student clerk. No psychiatric social workers are employed, but one full-time medical social worker cares for the needs of the unit. The ward is staffed by one nurse with psychiatric training, one nurse without special training, one other nurse, and two attendants. There are no hydrotherapists, occupational therapists, or recreational therapists except those supplied by the Grey Ladies' organization.

Patients are referred from other divisions of the hospital, by staff physicians, and occasionally by an outside physician. No restrictions on admissions exist on the basis of symptomatology; disturbed patients are accepted. Patients are accepted, however, chiefly on the basis of their value for teaching.

All methods of therapy are utilized, including hydrotherapy, occupational therapy, recreational therapy, psychotherapy, fever therapy, and electric shock therapy.

Comments.—Standards of psychiatric instruction of students on the inpatient service appear to be high. Limitation of acceptances chiefly to patients of staff physicians, chosen mainly for teaching purposes, does, however, limit the extent to which it serves the community as a whole. It does not meet the needs of the outpatient service for hospitalization of indigent patients.

The outpatient services are limited in their general service to the community, not only because of the lack of inpatient facilities but also because of administrative practices. The geographical restriction on Negroes places a greater load on psychiatric clinics south of the Loop. The deficiency of trained psychiatric social workers is a major deterrent to progress. Follow-up treatment is inadequate and is subordinated to instruction of students. A clearer demarcation between

psychiatric and neurologic cases would be of immeasurable benefit to the patients. There could be definite improvements in the general organization of the service without sacrificing its teaching aims.

INSTITUTE FOR PSYCHOANALYSIS This institution was founded in 1932 to give psychoanalytic teaching and research an opportunity for development similar to that enjoyed for a long time by other fields of medicine. A children's division was established in 1936. It is closely associated in teaching and research with the leading medical schools and clinics of the city, especially those of the University of Illinois, the University of Chicago, and Northwestern University. In the ten-year report ending with 1942, 202 psychiatrists, other physicians, and students of medical schools have applied for training in psychoanalysis. Of these, 107 were accepted.

The annual budget averaged about \$60,000 the last ten years; approximately 60 percent is covered by contributions and grants from the Rockefeller Foundation, and 40 percent from tuition fees and fees from patients. Fees charged patients undergoing treatment depend upon ability to pay and range from a nominal fee of 25 cents to fees equal to those charged by private analysts.

The professional staff at the present time consists of the director, the associate director, and twelve to fourteen other psychoanalysts, all on part time, a lay analyst, who is the full-time administrative director, and a full-time psychiatric social worker. Admissions are managed by the psychiatric social worker in consultation with an analyst. Every person who requests help from the Institute for Psychoanalysis is seen by appointment. The information necessary for proper evaluation of the applicant's condition is considered in a staff conference, at which the method of treatment is decided. Some patients are accepted for psychoanalysis, others for briefer types of psychotherapy. Some cases referred by social agencies may be handled through controlled therapy by the psychiatric social worker; others are referred to clinics or to private physicians throughout the city.

The Institute for Psychoanalysis probably has been one of the greatest factors in the stimulation of psychiatric thought and progress in the Chicago area. The staff includes many dynamic personalities who provide the incentive and direction for psychiatric activities in many of the clinics and teaching organizations in the city. The training of psychiatric social workers in the use of controlled therapy has perhaps been one of the most outstanding contributions of the Institute for Psychoanalysis. It has been very co-operative with regard to

requests from lay bodies to promote a more wholesome and intelligent attitude in the community toward the problem of mental health.

VOLUNTARY INSTITUTIONS WITH PSYCHIATRIC TEACHING FACILITIES

The following hospitals provide opportunities for the teaching of medical students: Michael Reese, Provident, Mt. Sinai, St. Luke's, Presbyterian, and Mercy.

MICHAEL REESE HOSPITAL This hospital has both inpatient and daily outpatient facilities for the care of psychiatric patients. Mandel Clinic, the outpatient department of Michael Reese Hospital, has operated a psychiatric clinic for many years. The inpatient unit was opened in Meyer House, the private pavilion of Michael Reese Hospital, in November, 1938. The hospital is approved by the American Medical Association and the American Board of Psychiatry and Neurology for psychiatric internships, residencies, and fellowships. At present, two residents work in both the inpatient and the outpatient services.

Inpatient services.—Ten semi-private rooms in Meyer House are available for twenty patients. Four of these rooms are reserved for contract cases from the Veterans Administration. Rates are \$10 a day for semi-private rooms, but may be adjusted in certain cases.

During the first three years of the psychiatric unit's existence, 48 psychiatrists, 5 of whom were members of the regular Michael Reese medical staff, had 48 patients under care. Total admissions now average about 300 a year, of whom about a third are readmissions. A number of cases are referred by private psychiatrists for one day's care to receive electric shock treatments. In the first three years of operation, the condition upon discharge of 65–70 percent of the cases was recorded as "improved."

Selection of cases is made by a committee of three staff physicians and is based upon the prognosis and the value of a case from the teaching standpoint. Lack of facilities for the care of disturbed patients restricts their admission. All types of therapy are offered.

Outpatient services.—Both children and adults are treated in the psychiatric outpatient service at Mandel Clinic. There are no racial or geographical limitations to admission. Because of the nature of the illness and the high cost, at private rates, of the long-continued and expensive treatment frequently required, the financial requirements for admission are very liberal.

Cases are referred by most of the social agencies in Chicago. Veterans with service-connected disabilities are accepted for treatment under contract with the Veterans Administration. Many of the patients in the clinic are self-referred. A large proportion of the cases treated are children, and usually treatment of both mother and child is co-ordinated.

At present the clinic has about 130 patients, of whom an average of 60 are seen each month. About 300 visits are made monthly. Appointments are scheduled two months in advance, and as the clinic load increases, the waiting period is likely to increase.

Staff.—The work of the medical staff is closely co-ordinated. The staff consists of 1 full-time psychiatrist; 20 psychiatrists each serving two half days a week; 3 full-time psychologists, who also carry on research; a child psychologist; 3 psychiatric social workers; and a reading and speech therapist. These statistics do not give the full picture of the psychiatric service at Michael Reese Hospital, since there are staff vacancies which they expect to fill.

Interns are accepted from the medical schools of Northwestern University and the University of Chicago. The School of Social Service Administration of the University of Chicago usually assigns ten students for three school quarters of clinic service. Most of the part-time psychiatrists work in the clinic without remuneration.

Comment.—Plans have been completed for a four-story pavilion separate from the main building for the care of psychiatric inpatients. Facilities for the care of children will be increased. Construction of an additional floor in the Mandel Clinic building is also planned for the outpatient psychiatric service. Upon completion of the new inpatient unit, an increase in the full-time staff is expected and the expansion of research activities.

Increase in the number of residents to five, serving over a three-year period, is planned. These residents will be given the option of analytical training at the Institute for Psychoanalysis. Five additional residents may also be accepted under the training program established by the Veterans Administration.

The inpatient and outpatient psychiatric services at Michael Reese Hospital are highly efficient and progressive and are held in high esteem by all the social agencies in the city. The psychiatric treatment facilities for outpatients are perhaps the largest in the city.

ST. LUKE'S HOSPITAL This hospital provides both inpatient and outpatient facilities for the care of psychiatric patients. It is ap-

proved by the American Medical Association and the American Board of Psychiatry and Neurology for internships and for satisfactory one- and three-year residencies. The inpatient service was established in 1939.

Inpatient services.—The inpatient unit provides accommodations for twenty-five patients. There are also two "quiet rooms." Children as well as adults are accepted. Patients are admitted only by transfer from other services of the general hospital or as patients of the staff physicians, usually those acutely ill whose prognosis is good and who are in need of intensive treatment. Room rates range from \$150 per week for private rooms to \$85 for semi-private rooms, and \$60 per week for three-bed rooms. No free cases are accepted. All types of therapy are available, including electric shock fever therapy, insulin therapy, prolonged narcosis, and psychotherapy.

The medical staff consists of 8 psychiatrists, 7 designated as consultants working part time, 1 full-time resident, and 1 full-time intern. There are 5 medical social workers under the supervision of a psychiatric social worker. Nursing care is provided by 6 professional nurses with psychiatric training, about 16 student nurses, 3 male attendants, and 1 female attendant. Full-time therapists are employed in the rehabilitation and recreational therapy departments.

Care was given to 513 patients in 1943 and 190 in the first six months of 1944 (the last years for which statistics are available). The average daily census in 1943 was 23.1.

Outpatient services.—The psychiatric clinic is open for a three-hour period every Monday and is served by one part-time psychiatrist. A full-time psychiatric social worker was employed recently. Referrals to the psychiatric clinic usually come from the other clinics in the outpatient department of the hospital, and from various social agencies. According to a statement made at the clinic, social agency referrals have dropped because of the decrease in the number of physicians available for service in the psychiatric clinic. Clinic authorities recognize the need for this type of service, particularly for adults.

During 1945 there were 300 patient visits to the clinic. It is estimated that 25 percent were for diagnosis and 75 percent for treatment. Both psychiatric and neurological cases were seen. The high percentage of visits for treatment indicates that a relatively large number of the cases seen were of a neurological nature. Statements made by clinic personnel lead to the conclusion that the psychiatric services

rendered are quite inadequate in view of the requests for psychiatric service received. What service is given is described as efficient. The immediate need appears to be an enlargement of facilities and increased professional personnel.

MT. SINAI HOSPITAL The psychiatric clinic is part of the large medical clinic in the outpatient department of Mt. Sinai Hospital. It is open for a two-hour period twice a week. Six part-time psychiatrists staff the clinic. There is no social worker and no psychologist. There are no racial or geographic restrictions. No persons are admitted who are able to pay for private psychiatric care. The clinic cared for 521 patients in 1945. The statistics do not differentiate between psychiatric and neurological patients or between patients given diagnostic service only and those receiving treatment.

The major emphasis appears to be on neurology, and the clinic has an excellent reputation in this respect. The psychiatric work is chiefly diagnostic. Apparently, no extensive treatment is given routinely.

PRESBYTERIAN HOSPITAL The recently developed psychiatric clinic is associated with the Presbyterian Hospital Pay Clinic. It serves patients whose financial resources are above the upper limits set for eligibility for care at the Central Free Dispensary, the outpatient department of Presbyterian Hospital, with which the psychiatric clinic is closely associated. All patients eligible for admission to Central Free Dispensary are referred to the Illinois Neuropsychiatric Institute if they need psychiatric care.

Fees at the psychiatric clinic approximate those charged by non-specialists in private practice. There are no geographic restrictions to admission. There is a section for children. The clinic is open almost daily, depending upon the number of patients desiring care. Because of the relatively short period of its existence, no figures on attendance were available.

Seven part-time physicians trained in both psychiatry and neurology staff the clinic. Social service is provided by the social service department of Presbyterian Hospital. The clinic physicians hospitalize patients for shock therapy on the general service at Presbyterian. The hospital has no psychiatric inpatient services.

MERCY HOSPITAL The psychiatric clinic is a part of the medical clinic of Mercy Hospital's outpatient department. It offers teaching facilities to students of the Loyola University School of Medicine. It holds one two-and-a-half hour session weekly. One part-time psy-

chiatrist and one part-time social worker constitute the staff. Adults only are accepted. There are no racial, residential, or other restrictions. Referrals come chiefly from other clinics in the outpatient department, although outside agencies do use the clinic to a limited extent.

Both psychiatric and neurological services are provided. It is estimated that the number of psychiatric cases seen during the "past year" (1945 or 1944-45) was about two hundred; half of them received diagnostic service only, and the other half, diagnostic and therapeutic care combined. About six hundred visits for neurological care also were made during the same period.

The clinic is limited both in physical facilities and by the small professional staff. It cannot provide the services demanded of it. An increase of the existing facilities is contemplated.

PROVIDENT HOSPITAL This hospital is located on Chicago's South Side where the Negro population is largely concentrated. The psychiatric clinic is a part of the regular outpatient service and is closely integrated with the medical clinic. It developed with the appointment of a part-time psychiatrist to the medical clinic in 1933. In 1935 a psychiatric social worker was assigned for supervision of a group of students from the School of Social Service Administration of the University of Chicago. At present the regular psychiatric staff consists of the part-time staff psychiatrist and the psychiatric social worker, who serves a day and a half each week. The services of a second psychiatrist one day weekly have been obtained recently. The return of a neurologist, now taking further psychiatric training at the Illinois Neuropsychiatric Institute is anticipated. A medical social worker gives half time to the admission of patients to the psychiatric clinic. Three students from the School of Social Service Administration serve in the clinic twenty-four hours a week under the supervision of the psychiatric social worker. No student nurses are assigned to the psychiatric clinic, and no stenographic services are available.

Clinic visits totaled 1,163 in 1943; 1,208 in 1944; and 1,372 in 1945. Admissions during the first part of 1946 were reduced because of the limited professional staff. The staff psychiatrist sees at present an average of fifteen patients during the half-day period he gives to the clinic each week, a considerably larger number than he can handle satisfactorily. Student psychiatric social workers provide controlled therapy under the supervision of the clinic psychiatric social

worker and the clinic psychiatrist. They carry a very heavy case load. The physical facilities of the clinic are entirely inadequate. There is only one consultation room.

The integration of the psychiatric clinic with the medical clinic has been a deterrent to its efficiency because of the tendency of other clinics in the outpatient department to use it as a "dumping ground" for chronic patients. More insight into the problems of the psychiatric clinic on the part of other members of the hospital staff might eliminate some of the referrals of untreatable cases.

The staff psychiatrist states that he can arouse little interest in psychiatric internships at Provident Hospital among Negro physicians under present conditions, but believes that he could do so were the facilities more adequate. An inpatient ward of fifteen to twenty beds with facilities for intensive treatment and outpatient services staffed by sufficient personnel, professional and stenographic, are urgently needed to care for the tremendous overload of the present clinic. This unit preferably should be affiliated with rather than controlled by Provident Hospital. The present staff of the psychiatric clinic would serve as a most efficient unit around which to construct a satisfactory organization. The proposed unit, under the capable direction of the present psychiatrist, could form an integral part of the psychiatric teaching and outpatient facilities of Chicago through medical school and hospital affiliations and by the establishment of residencies in psychiatry.

There are no facilities for inpatient care of Negroes in the Chicago-Cook County area except at the Cook County Psychopathic Hospital and at the state mental institutions. Probably no other area in the county presents as urgent psychiatric problems. The need for adequate psychiatric care for Negroes has been pointed out by the Illinois Society for Mental Hygiene and by other interested groups during the last few years, and recommendations have been made, but with no apparent success.

VOLUNTARY HOSPITALS WITH LITTLE OR NO PSYCHIATRIC TEACHING

Psychiatric services are available at two other Chicago hospitals (Women and Children's and St. Joseph) and at the Evanston Hospital in Evanston, Ill.

WOMEN AND CHILDREN'S HOSPITAL Inpatient care is limited to patients who experience psychiatric disorders during hospitaliza-

tion on the general service, and even these are referred usually to the Cook County Psychopathic Hospital. Outpatient service is provided chiefly to patients referred by physicians on the hospital staff, although occasionally referrals for diagnosis are accepted from the various social agencies in the city.

A consulting psychiatrist conducts clinic services one day a week from two to five P.M. A part-time medical social worker takes social histories and follows through on recommendations. Admissions are limited to white and Negro women and children.

During 1945 ninety-eight patients were accepted for clinic care, approximately half for diagnostic service, the other half for treatment. The usual clinic load per session consists of two to three new patients and six patients under treatment. An estimated ten patients were given neurological care during 1945.

For the services provided, the present staff apparently is adequate, although diagnostic facilities would be increased by the appointment of a part-time psychologist. The hospital plans to add a psychologist and additional social workers in 1947 and may open an evening clinic.

ST. JOSEPH HOSPITAL This hospital is a Catholic institution connected with De Paul University. It provides both inpatient and outpatient psychiatric facilities. The inpatient service, located in a separate section of the hospital, was established in December, 1943. The facilities include three private rooms, nine semi-private rooms, and three private emergency rooms. Weekly rates are \$70 for private rooms and \$50 for semi-private accommodations, with additional charges for special procedures or medication. Occasionally a free case is accepted. Since its establishment, the unit has cared for 262 patients, approximately one hundred per year. Admission is on recommendation by one of the attending psychiatrists or by referral from the general medical section of the hospital.

Patients are limited to women. Both acutely and slightly disturbed psychotic persons are accepted for care. The following types of cases usually are refused: alcoholics, drug addicts and psychoneurotics, epileptics, paralytics, and senile psychoses.

The unit is in charge of a professional nurse, responsible to the senior psychiatrist on the hospital staff. Four other staff psychiatrists hospitalize their patients in the unit and are individually responsible for them. The regular nursing staff of the unit consists of three

nurses without specialized psychiatric training, one full-time male attendant, and one full-time female attendant. Student nurses from De Paul University serve in the unit at intervals.

Outpatient services appear to be limited to the diagnosis and treatment of patients under the care of the attending staff psychiatrist.

SANITARIA SERVING THE CHICAGO-COOK COUNTY AREA

Five sanitarium located in Chicago or its suburbs and six outside Cook County are licensed by the Division of the Alienist of the Illinois Department of Public Welfare to serve mentally ill patients, and are utilized by patients from the Chicago-Cook County area. Ten are under proprietary control. One is operated by a Roman Catholic sisterhood. Their combined bed capacity is 667.

Classification of these eleven sanitarium according to their physical properties and the care and treatment of patients indicates that four would be rated as excellent, six as good, and one as poor. Two offer excellent psychotherapy; eight, good psychotherapy; one offers little or nothing. Seven have full-time hydrotherapists, and six have full-time occupational therapists. The average charge at each institution is \$85 per week. None of the institutions accepts disturbed patients, and only one accepts children. The Catholic institution includes among its patients many elderly persons for whom little or no psychotherapy is indicated or attempted. Only about half the sanitarium appear to maintain standards of operation which even approach those set by the American Psychiatric Association. A few are obviously inadequate, offering facilities for care and treatment considerably below even borderline standards. One or two are little more than rest homes.

The 667 beds provided by these eleven sanitarium, plus 113 available in the psychiatric inpatient facilities of Billings, Michael Reese, St. Joseph's, St. Luke's, and Wesley Memorial hospitals, offer facilities on the whole only for patients of above-average income levels. The combined total of 780 beds is inadequate even for this relatively high-income group.

Because of the great demand for private facilities for mental patients, however, criticism should not be too severe. In none of the institutions was care and treatment exactly "worse than nothing." A more stringent application of licensing regulations with more frequent and more thorough inspections is needed and might lead to improvement in the standards and methods of operating institutions

of this type. At present, the lack of well-trained professional personnel is the most serious handicap. Certainly no attempt should be made to increase the number accepted for hospitalization until better care is provided for those already hospitalized.

REST HOMES SERVING THE CHICAGO-COOK COUNTY AREA

Rest homes are defined in the Revised Mental Health Act as "for the custodial care of patients with chronic mental illnesses who are not in need of active medical treatment." Two private rest homes in Chicago and six in near-by communities are available for senile persons in the Chicago-Cook County area in need of institutional care. The 176 beds provided by these eight homes would be almost negligible in relation to the problem, even if all were first-class institutions. Only three, however, appear to be fulfilling reasonable standards of care. Persons who place their elderly relatives in private rest homes, frequently at a cost which is embarrassingly beyond their means, are deluded if they believe that their relatives are better off than they would be in state institutions. More stringent application of state regulations in the supervision of these institutions and more frequent inspections might improve standards of care.

ILLINOIS SOCIETY FOR MENTAL HYGIENE

This voluntary agency, incorporated in 1910, is sustained by membership fees, contributions, and allotments from the Community Fund of Chicago, Inc. Although the interests of the society are state-wide, a considerable proportion of its resources is expended on problems in the Chicago-Cook County area. It does not provide service to clients. Its principal objective is the promotion of adequate psychiatric care and the education of the public in matters of mental health.

Specifically, the promotional activities of the Illinois Society for Mental Hygiene are directed toward (1) encouragement of legislation to provide a more comprehensive mental hygiene program in the state; (2) improvement of psychiatric facilities in state institutions, voluntary hospitals, sanitarium, rest homes, and clinics; (3) training programs for psychiatric personnel; (4) community education in mental health needs. Periodic surveys of psychiatric facilities and constructive analyses of existing deficiencies have been made by the society, and advisory service has been given to other community agencies.

The society, together with other agencies interested in the field of psychiatry, recently participated in a survey of the mental hygiene facilities under the jurisdiction of the Illinois Department of Public Welfare. This report was submitted in the 1945 Annual Report of the Illinois Board of Public Welfare Commissioners, who subsequently resigned. The report, however, appears to have been a straightforward and unbiased statement of the deficiencies existing in the state-controlled institutions, together with a comprehensive and thoughtful plan of the constructive measures needed to correct these deficiencies.

The society played a major role in the establishment of the present Veterans' Rehabilitation Center. It was also instrumental in obtaining the revision of the mental health laws of 1943 and 1945, which resulted in considerable improvement over the former prescribed methods of commitment.

While the society has acted as a "referral agent" whenever it has received requests for psychiatric services, it considers this work unsuited to its established purposes and would prefer to have it carried by some other psychiatric agency.

Harmonious relationships appear to exist in most cases between the society and the psychiatric workers in the area. Since the greatest deterrent to a unified attack on the mental problems of the Chicago-Cook County area appears to be the lack of a co-ordinating agency, consideration should be given to the possibility that the whole psychiatric group would be benefited by enlarging the scope and increasing the authority of the Illinois Society for Mental Hygiene. The potentialities of this organization for rendering service in the mental health field to the community are boundless. A dynamic program, energetically pursued, would be rewarded undoubtedly by significant constructive changes and improvements.

MENTAL HYGIENE SERVICES PROVIDED BY SOCIAL AGENCIES

The social agencies of the Chicago-Cook County area have, to a rather unusual extent, recognized the importance of the psychiatric aspects of their clients' problems. Many utilize the services of part-time psychiatric consultants; one employs a psychiatrist full time. Ordinarily, clients of the agencies are not seen directly by these consultants, but case workers discuss the psychiatric problems of their clients with the consultants and are guided by them in the action they take on such cases. Almost all the agencies emphasized

the present inadequacy of the psychiatric clinic services available in the area, the delay in obtaining appointments for clients in need of this type of care, and the unfortunate limitation of psychiatric service to diagnosis by most of the clinics.

The child welfare agencies in particular utilize their psychiatric consultants to help their staff members gain an awareness of the psychiatric problems of childhood and to give them an understanding of the extent to which they themselves can deal with such problems. The work of the Jewish Children's Bureau will be described briefly, since its mental hygiene program for children is much more extensive than those of the other welfare agencies. This agency, primarily concerned with the placement of children, especially court referrals, has always emphasized the psychiatric approach in the solution of the problems of maladjusted children. It employs six part-time consulting psychiatrists, who see children needing psychiatric care and advise case workers who do control work. These consultants work closely with the psychiatric division of Michael Reese Hospital which provides psychiatric care for children served by the agency. It is hoped to establish a training center for psychiatric attendants and counselors for children's institutions. The Illinois Children's Home and Aid Society, a placement service particularly concerned with the problem of emotionally disturbed children, has appointed a committee to draft specifications for an institution for the care and treatment of this type of child.

The Good Will Industries was established to provide work therapy in proper adjustment for physically handicapped persons. It has come gradually to accept mental cases also. A number of its clients present mental problems, including mental deficiency, epilepsy, psychoneuroses, and postpsychoses. Referrals to the Good Will Industries are made by social agencies in the community. It also serves persons discharged from the Lincoln and Dixon schools for mental deficiency.

PRIVATE SCHOOLS FOR PROBLEM CHILDREN

Three private schools in Chicago and two in other cities in Illinois are used for children in the Chicago-Cook County area who have behavior problems or are mentally defective. The Orthogenic School, under the auspices of the University of Chicago, is considered one of the best institutions in the country. Its primary purpose is the study and treatment of children of normal intelligence who are unable to

make a satisfactory adjustment at home or at an ordinary school because of emotional difficulties. St. Mary of Providence, also in Chicago, accepts mentally retarded girls who are teachable and has met with considerable success in its endeavors. The services of this school are utilized by the Juvenile Court of Cook County, the Institute for Juvenile Research, and a number of other children's agencies. The E. A. Boos School of Development, the third Chicago school, accepts retarded children. It is not licensed, although it has attempted to meet license requirements on several occasions.

The Mary E. Pogue School of Wheaton, Ill., accepts epileptics, spastics, behavior problems, and mentally retarded children. The Beverly School of Godfrey, Ill., accepts mentally retarded children, spastics, syphilitics, and other children whose emotional disorders have caused their maladjustment, but who are not primarily retarded. The school has excellent facilities for the management of the children.

PSYCHIATRISTS IN THE CHICAGO-COOK COUNTY AREA

It is estimated that 141 physicians practice psychiatry and/or neurology in the Chicago-Cook County area and 82 express interest in both fields.¹ Sixty-three of the 141 physicians are diplomates of the American Board of Psychiatry and Neurology. Fifty of these spend part or all of their time in the psychiatric teaching facilities of the community; 26 are engaged in work at private sanatoria or hospitals. Approximately two-thirds of the physicians indicated their average fees. Of the number reporting, 28 charged \$20 or more per visit; 51, from \$10 to \$20; and 15, \$10 or less. Sixty-five of the 163 indicated that they were willing to make occasional home calls for welfare agencies at \$10 per visit.

SUMMARY AND COMMENTS

This review of psychiatric facilities and services in the Chicago-Cook County area reveals a surprisingly large number of agencies (tax-supported and voluntary) engaged in the provision of various types of psychiatric care. Sponsorship of these services by so many and such diverse groups indicates a general awareness of the need for psychiatric service, but the lack of co-ordination of the various activities hampers the effectiveness of their work. While the survey has revealed many shortcomings and deficiencies, some of which,

¹ This estimate is based upon a list compiled by the Illinois Society for Mental Hygiene.

such as the shortage of professional personnel and the inadequacy of financial support, reflect nation-wide conditions, establishment of an over-all organization to co-ordinate the present independent psychiatric activities is perhaps the first step which should be taken by the Council of Social Agencies of Chicago and the other organizations and agencies sponsoring psychiatric services.

In attacking the problem of adequate psychiatric care in a community, the following three procedures are basic: (1) establishment of services which will keep as many people as possible out of mental hospitals, (2) for those who must be hospitalized, provision of treatment which will get them out as soon as possible, (3) for those whose condition necessitates continued hospitalization, provision of adequate facilities for care. The following summary of conditions found in the Chicago-Cook County area will indicate the chief problems which must be solved before satisfactory services can be made available.²

To keep people out of mental hospitals implies the necessity for an efficient program of prevention—mental hygiene care for people in the beginning stages of mental illness. Diagnosis, however, is not enough; there must be treatment as well. Provision of adequate treatment for ambulatory cases before they reach the stage where commitment to an institution is necessary should be a matter of much concern to all mental hygiene clinics. In the Chicago-Cook County area psychiatric clinic facilities are insufficient to accommodate even the requests for diagnosis, while provision for follow-up treatment is still less adequate. It is estimated that the social agencies throughout the area have more than two thousand cases annually in need of psychiatric treatment which cannot be obtained.

Present clinic facilities for mental hygiene and psychiatric care need expansion; additional clinics should be established. Three large clinics, the psychiatric clinic of Mandel Clinic (the outpatient department of Michael Reese Hospital), the Illinois Neuropsychiatric Institute, and the Chicago Community Clinic provide most of the ambulatory psychiatric care available. Michael Reese Hospital is planning enlargement of both inpatient and outpatient psychiatric facilities. The Illinois Neuropsychiatric Institute could provide more treatment if there were better screening of patients. Increase in the number of psychiatric social workers employed would improve con-

² Administrative and other functions of the state mental hospital system not specifically related to the Chicago-Cook County area are not considered in this review.

ditions. The present load of pre- and post-commitment services handled by the Chicago Community Clinic is entirely beyond its capacity. The total hours served by psychiatrists in this division of the clinic average about the time which would be given by four and one-half psychiatrists working full time. At least four times this number, with proportionate increases in other types of personnel, is a minimum requirement. This increase can be accomplished only if adequate salaries are paid.

Since many mental illnesses have their inception in childhood personality disorders, behavior problems, and social maladjustments, the provision of mental hygiene services for children is of utmost importance. Mental illness is preventable at this stage if the early signs are recognized and adequate treatment is instituted. Mental hygiene facilities of this type in the Chicago-Cook County area are insufficient.

The Institute for Juvenile Research, which serves as the headquarters of a state-wide service, is not equipped to handle the problem. Diagnostic services are inadequate, and treatment services do not begin to meet the demand. Appointments can be made only after a delay of several weeks. The staff is tireless and efficient, but an average of ten psychiatrists cannot meet the psychiatric problems of the state's one and a half million children. Increase of the staff to five times its present number is essential for the provision of adequate service to children in the Chicago-Cook County area alone. Additional staff must be employed for service in clinics in other sections of the state to provide even the beginnings of effective service.

The program for children in the public schools is directed toward psychological analysis and the determination of the child's ability to carry his school work. While this type of service is admittedly essential to a school program, the employment of 65 psychologists and only 1 psychiatrist on the staff of the Bureau of Child Study indicates an overemphasis on testing and a corresponding neglect of the mental hygiene needs of school children. With the abolition of the visiting teacher during the depression years, the liaison between home and school was severed almost completely. The service which a single psychiatrist can provide is inadequate even to meet the needs of the special schools in the Chicago system. In contrast, the Bureau of Child Guidance of the New York City Department of Education employs a staff of well-paid psychiatrists who conduct a program which integrates the intramural and extramural activities of the child.

The establishment of mental hygiene clinics in, or associated with, the individual schools throughout Chicago's public school system is without question an urgent necessity. These clinics should be staffed adequately by trained psychiatric personnel.

A program of prevention can be effective only if services are easily available. The geographical distribution of psychiatric clinics in the Chicago-Cook County area reveals glaring deficiencies in some sections. At present, all psychiatric facilities are located in approximately the inner third of the area. Yet many outlying communities are heavily populated, and a large proportion of their residents belong to the marginal- and average-income groups who cannot afford private care. The establishment, throughout the area, of a system of psychiatric clinics, with evening sessions, either in the outpatient departments of general hospitals, as units of district health centers, or as independent units under some other agency is essential to a successful mental hygiene program.

The inpatient facilities for psychiatric care in the Chicago-Cook County area are taxed beyond their capacities in almost all cases. The four state mental hospitals and the two institutions for mental defectives are tremendously overcrowded. Obviously, increased appropriations for new buildings are needed if the present overcrowding is to be eliminated. While efficient administration of these institutions and the putting into effect of the recommendations for extramural care will eventually go far toward decreasing the demand for state hospitalization, a continuous building program will be necessary for some time.

The 175-bed Cook County Psychopathic Hospital provides merely a diagnostic service for the commitment of patients to the state mental hospitals. Its present inadequate facilities necessitate "assembly line" methods in handling the 6,500 annual admissions and limit the average stay of admitted patients to six days. This institution should be replaced completely by a 500-bed hospital with facilities for intensive treatment. Prolonged hospitalization of many cases of mental illness could be prevented if such treatment were available.

The resultant saving in the cost of hospitalizing this group would make the initial cost of the proposed treatment center insignificant in comparison. Although the primary purpose of this hospital would be community service, it could also take an important part in a training program for residents.

The Cook County Psychopathic Hospital annually releases many patients, borderline or frankly psychotic, to the care of relatives

supposed to be able to give them adequate supervision. These patients are also in need of the type of psychiatric supervision offered by the Chicago Community Clinic and by the outpatient social service department of the Illinois Department of Public Welfare to conditionally discharged state hospital patients. Part of the inmates of every mental hospital could be released to the care of responsible relatives if systematic psychiatric follow-up care were available.

Facilities for children in need of inpatient psychiatric care are entirely inadequate. The Institute for Juvenile Research has beds for only fourteen children, selected chiefly on the basis of their value in the teaching of medical students and research. This number is negligible in meeting the over-all problem. Except for the Orthogenic School, the inpatient divisions of the child guidance centers now being set up by the Jewish children's agencies, and the institution planned by the Illinois Children's Home and Aid Society, there are no inpatient facilities for the care of children with personality disorders, children in prepsychotic states, and defective delinquents.

Except in the state mental hospitals, there is little provision in the Chicago-Cook County area for psychiatric care for those among Chicago's 350,000 Negroes in need of this service. Inpatient care for Negroes, regardless of their ability to pay, is available only at the Cook County Psychopathic Hospital. While both Mandel Clinic and the Illinois Neuropsychiatric Institute accept Negroes for outpatient psychiatric care, the facilities of these two institutions are far too limited to begin to meet the demands for service.

Provident Hospital, which is located in the heart of Chicago's largest Negro district, is not equipped to provide inpatient care to psychiatric patients and the demand for general care is too great to justify setting aside beds for a psychiatric unit under present conditions. The physical facilities of the psychiatric clinic in the outpatient department are inadequate in relation to the tremendous demand for service. There is urgent need for the establishment of a psychiatric treatment center, with both inpatient and outpatient facilities, in the area served by Provident Hospital. Earlier surveys also have emphasized this need.

The Illinois Society for Mental Hygiene has emphasized the distinction between "medically indigent" and "psychiatrically indigent," because of the expense of the long-term treatment required, and points out the necessity for making admission officers and others

concerned with outpatient admission policy aware of this distinction. A large proportion of the population who would be able to pay for general medical care at private rates fall into the group of "psychiatrically indigent" because they are utterly unable to pay for private psychiatric care.

Satisfactory psychiatric clinic service will be available to the large group in the population unable to afford private psychiatric care only when the number of psychiatric personnel serving in clinics is increased. Accepted minimal requirements for the average community stipulate one psychiatrist, one psychologist, and two and one-half psychiatric social workers per 100,000 population, for clinic examination and treatment of 300 adults and 250 children per year. On this basis, the Chicago-Cook County area needs, in the clinic field alone, the full-time services of 40 psychiatrists, 40 psychologists, and 100 psychiatric social workers. At present, the area has only 60 percent of the number of psychiatrists required, 72 percent of the psychologists, and 44 percent of the psychiatric social workers.

There are two obvious solutions to the problem of shortages of professional personnel: (1) an increase in the salary scales sufficient to attract persons from other communities or, in the case of psychiatrists, to keep them from leaving the clinic field for private practice; (2) an increase in the number available in the community by the establishment of satisfactory training programs for residents.

The staffs of all state institutions are in sore need of additional psychiatrists, residents, nurses, and social workers. Only through a general increase in the salary scales, the establishment of security of positions, the acquisition of leaders in the field to direct clinical and research activities, and the integration of the system more thoroughly with community functions can this increase be attained. The existing salary scales at the Institute for Juvenile Research are also a barrier to progress. Professional salaries are but a fraction of "the average income of such specialists in the area served" and are significantly lower than those for similar positions in other areas. As a result, workers are likely to remain only until they have gained sufficient experience to fit them for better-paid positions.

The "screening out" of patients in need of psychiatric care by psychiatric social workers is of inestimable value to the psychiatrist, because it enables him to devote his limited time to patients most likely to react favorably to therapy. Many patients with psychiatric problems who could not be cared for otherwise can be handled satis-

factorily by psychiatric social workers through controlled therapy.

The present shortage of psychiatrists and psychiatric social workers should not, however, lead to the employment of untrained workers in this type of service, or even of trained workers, unless adequate supervision is available. An increase in the general salary scale for psychiatric social workers and psychiatric orientation courses for all medical social workers would help materially to overcome the present shortage of trained workers.

Twice the number of psychiatric residents can be trained in the Chicago-Cook County area without undue hardship to the institutions concerned. Such an increase should be the immediate concern of all administrators of psychiatric facilities. The demand for psychiatric residencies is evidenced by the experience of two well-known psychiatric hospitals in other cities. One received nearly six hundred applications and the second four hundred for a small number of residencies. Energetic young physicians will not, however, apply for residencies in institutions staffed by men who are not qualified teachers and leaders in the field. Some of the psychiatric residencies in the Chicago-Cook County area cannot be filled because the physicians in charge are not dynamic leaders. On the other hand, the demand for training is great in some Chicago institutions which have acquired top men. The other institutions in the area must establish key positions in both inpatient and clinic services, with salaries sufficiently high to attract the outstanding men in the field.

Another situation which needs improvement is the supervision and care of the "care and custody" cases designated by law as the wards of the Illinois Department of Public Welfare. No specific division of the department has assumed responsibility for this group, and there are not enough psychiatric social workers to provide the services needed. A subordinate officer in the department should be designated to assume responsibility for this group. Facilities for the vocational training of the educable mental defective should be increased substantially. At present, the Good Will Industries is the chief agency which provides this type of service.

RECOMMENDATIONS

It is recommended that:

1. An organization shall be established to integrate all the inpatient and the outpatient psychiatric services in the Chicago-Cook County area, including psychiatric social service. This organization

should co-ordinate the activities of tax-supported and voluntary institutions and agencies, including the proprietary institutions. The Illinois Society for Mental Hygiene might serve as such a co-ordinating body if the interested groups wished it to perform that function and if its services were strengthened and expanded. Otherwise, a new agency might be set up.

2. The number of professional personnel employed in psychiatric outpatient services, especially in the Chicago Community Clinic, shall be increased. To obtain more personnel, it will be necessary to set up adequate salary scales. Psychiatrists, in particular, must be paid salaries which at least approach the average income of psychiatrists in private practice.

3. Psychiatric divisions (for both inpatients and outpatients) shall be established in general hospitals not now providing these services.

4. The present Cook County Psychopathic Hospital shall be replaced by a new 400- to 500-bed unit designed as a diagnostic and intensive treatment center. This unit should provide outpatient facilities for diagnosis and treatment as well as for commitment. The attending professional staff should be placed under civil service.

5. A comprehensive child guidance program shall be established in the public school system with emphasis on the mental hygiene aspects of children's problems, instead of the present almost exclusive concentration on the psychological aspects. Such a plan would necessitate an increase in the number of psychiatric personnel and the establishment of child guidance clinics in individual schools.

6. The psychiatric staff at the Institute for Juvenile Research shall be increased to five times its present number in accordance with the recommendations made by the Illinois Board of Public Welfare Commissioners, and this increase shall be accomplished partly by substantially raising the existing salaries. The Institute for Juvenile Research cannot meet a fraction of its responsibilities to the children of the community with its present staff and physical plant.

7. Inpatient facilities shall be established in the Chicago-Cook County area for care of children with behavior problems, prepsychotic children, and defective delinquents. The existing social problems presented by the adolescent emphasize the necessity for such facilities.

8. Psychiatric outpatient facilities shall be provided in the many localities in the area so far from existing psychiatric clinics that the

travel time required is prohibitive to many residents in need of psychiatric service.

9. Inpatient and outpatient facilities shall be provided in the area served by Provident Hospital. A unit meeting both requirements is necessary.

10. Eligibility for psychiatric outpatient care shall be based on standards more liberal than the Council of Social Agencies budget recommended as a guide in determining eligibility for general outpatient care. Outpatient admissions officers and others concerned with outpatient admitting policy should be made aware that costs of psychiatric treatment are higher than costs of other medical care because treatment must continue over such long periods.

11. A low-fee clinic with evening sessions shall be established by the Illinois Society for Mental Hygiene to serve the middle-income group.

12. All organizations employing psychiatrists shall endeavor to increase their salaries to a level at least approximating the average income of psychiatric specialists in the community. These salary increases are necessary to keep qualified individuals from resigning to accept better-paid positions in other communities or to devote themselves entirely to private practice.

13. In view of the shortage of psychiatrists, all possible means shall be taken to utilize the existing psychiatric facilities in an expansion of training programs for residents in psychiatry. It is probable that many of the institutions could double the number of residents trained with little inconvenience. The appointment of qualified teachers and leaders in psychiatry, made possible by adequate salaries, to the staffs of the psychiatric institutions would ensure a demand for the additional residencies.

14. The psychiatric social worker, an indispensable assistant to the psychiatrist, shall receive remuneration commensurate to her duties.

15. State appropriations for new buildings in the state mental hospital system shall be made without delay to relieve the present overcrowding.

16. The shortage of psychiatric personnel in the state mental hospitals shall be alleviated by a general increase in salaries, the establishment of security of position, and the employment of leaders in the field of psychiatry to direct clinical and research activities and to stimulate the training program.

17. The "care and custody" cases, designated by law as the re-

sponsibility of the Illinois Department of Public Welfare, shall receive adequate supervision and care. This activity should be assigned specifically to a subordinate officer in the department, and a sufficient number of psychiatric social workers should be engaged to carry the work, under his supervision.

18. The state law shall be revised to place the position of state alienist under civil service.

19. The problem of the educable mental defective shall be met adequately. The existing facilities in this field should be expanded and additional facilities provided.

20. Psychiatric orientation shall be provided for all social workers.

MATERNAL AND CHILD HEALTH SERVICES

by *Dudley A. Reekie, M.D.*, and
K. E. Miller, M.D.

THE STEADY REDUCTION in maternal and infant mortality rates in most sections of the United States, especially during the last decade, reflects both general improvements in public health and the particular attention paid during this period to maternal and child health services. The statistics in Chapter 23 reveal the extent to which prevention of death during the years of infancy and early childhood has contributed to lengthening the life span. The stress laid upon activities in the field of maternal and child health is well justified, therefore, although they should be part of, rather than separate from, a generalized health program.

MATERNAL AND INFANT MORTALITY RATES

Clear evidence of the excellence of Chicago's antenatal, natal, and postnatal services is shown by its average general maternal mortality rate of 1.9 per 1,000 live births for the five-year period 1941-45. Every maternal death occurring in the area is investigated, and all the findings are reviewed by a special committee, including obstetricians, gynecologists, and pathologists, in an effort to determine errors which may be avoided in future cases. This policy has undoubtedly been an outstanding contribution to the favorable maternal death rate.

Chicago's maternal mortality rate for 1945 of 1.6 per 1,000 live births is approximately the same as that reported for New York City and lower than the rates reported for six of the thirteen largest cities in the United States. The infant mortality rate for Chicago in 1945 was 29.6 per 1,000 live births, and for the county outside Chicago, 27.12.¹ The rate for Chicago was lower than the 1945 rates reported by all except one of the thirteen largest cities.

¹ The rate for Cook County, excluding Chicago, is taken from the vital statistics tables of the Illinois Department of Public Health. Rates for Chicago and Cook County are not comparable, because of problems involving residence allocations of deaths, and possibly for other reasons, such as character of the population.

CHICAGO HEALTH DEPARTMENT SERVICES

The three types of service provided to mothers and infants by the Chicago Health Department are the maternal and child health clinics, the premature infant care program, and the program for pregnant women found to be infected with syphilis.

MATERNAL AND CHILD HEALTH CLINICS The Chicago Health Department maintains maternal and child health clinics in thirty-seven localities and holds 6,500 clinic sessions annually. Of this number 1,500 are for expectant mothers and 5,000 for infants and children up to two years of age. Approximately 50 part-time clinicians and 200 nurses are employed in the management of the health department clinics. The entire staff of field nurses rotates in clinic service.

At the time of the Chicago-Cook County Health Survey, 4,536 mothers or expectant mothers were registered in the maternal health clinics, and 15,884 infants and young children in the child hygiene clinics. On the basis of the 59,343 births recorded for 1945 (including multiple births), it may be estimated that the number of pregnancies which came to delivery was approximately 60,150 (less about 600 multiple births and plus 1,400 stillbirths). Since the number of expectant mothers registered in the health department clinics in 1944 was 4,356, it may be assumed that about 7 percent of the expectant mothers in Chicago sought the services of these clinics. No calculation of the percentage of infants served in the clinics can be made, because all children up to two years of age are included in the total registration in the child hygiene clinics.

In addition to the usual items of medical care available to mothers and infants at the clinics, a considerable amount of preventive service is provided. Prospective mothers are given routine blood tests for syphilis, urine tests for evidence of kidney involvement and diabetes, dietary advice, examinations for suspected tuberculosis and heart diseases, and such other specialized examinations and services as may be indicated. Where hospital treatment is required, the patients are referred to appropriate hospitals. The special services available to pregnant women with syphilis are discussed under a separate heading.

The service to mothers in the clinics, though extremely important, is secondary to that for infants and young children. Since the health department limits its attention to children up to two years of age,

preschool children receive no attention from either official or voluntary agencies except in sections of the city where the Infant Welfare Society of Chicago operates clinics for children up to school age. Plans are being made, however, by the Chicago Medical Society, the Health Division of the Council of Social Agencies of Chicago, and the Chicago Health Department to secure funds to permit the extension of clinic care by the health department to preschool children over two years of age.

In the child health clinics well babies are served. There were 15,884 registrants in 1945 and 98 well-baby conferences were scheduled for each week. Most important from a public health standpoint is the immunization against diphtheria, smallpox, and whooping cough. This phase of the clinic work has already been discussed in Chapter 25. Of far-reaching importance, also, is the nutritional service for both infants and mothers. Ordinarily, printed diet sheets applicable to various ages and general conditions are distributed, but pediatricians in the clinics may also at times adjust individual feeding formulas (see Chapter 38).

In the case of disorders or illnesses not suitable for treatment in the clinics, the patients are referred to hospitals for more specialized care. In addition to the regular clinic stations, the health department maintains three centers for the free distribution of mothers' milk to babies requiring this type of feeding. Donors to this service must undergo a rigid physical examination and attend the various group conferences and motion picture demonstrations established to make the mothers more intelligently co-operative in the program. An excellent educational and teaching program was carried out in the Mothers Milk Station observed by the survey group. Donors are paid according to the amount of milk supplied. During 1945, a total of 272 mothers contributed to this service, and 59,546 ounces of mothers' milk were distributed by the health department to 3,665 infants.

Not all the clinic nurses limit their duties entirely to service at the clinic stations. A large number of home calls are made, principally to determine the adequacy of medical care and to urge inoculation of infants and children against diphtheria, smallpox, and whooping cough. A detailed study of nursing activities is presented in Chapters 34-36.

CARE OF PREMATURE INFANTS The program for the care of premature infants developed by the Chicago Health Department during the past ten years is an outstanding achievement which has

attracted nation-wide attention. The department has available at all times nurses especially trained in the care of premature infants, together with especially equipped "premature" ambulances, including seven incubators for transfer of babies to hospitals which have the facilities necessary for the continued care of cases of this type.

To facilitate the operation of this program, births of all babies born prematurely or weighing less than five pounds must be reported immediately to the health department. If the birth is in a home or in a small hospital where specialized care is not obtainable, the department sends out the special ambulance, staffed by a professional nurse, to transport the infant to a hospital with suitable facilities. During 1945, 775 infants were cared for by this method. The number of infants classed as premature during 1945 was 3,712, of whom 2,905 survived the first two weeks of life—a very good rate of survival.

Of the fifty-seven hospitals with maternity wards in Chicago which are co-operating with the premature-infant program, two have special wards for the care of premature infants only. The remainder are equipped to give immediate temporary care. No infant is released from specialized attention until a weight of eight pounds is reached.

CARE FOR PREGNANT WOMEN WITH SYPHILIS The program for the care of pregnant women found to be infected with syphilis is so meticulous as to deserve special description. Up to the time that penicillin began to be used in treating syphilis, the treatment program consisted of injections of arsenicals and heavy metals at stated intervals over a minimum period of eighteen months. The length of time required for treatment naturally resulted in lapsed and incomplete treatments in many instances. Routine use of penicillin, however, has reduced the treatment period to a matter of a few days.

On April 9, 1945, the Chicago Health Department adopted a policy under which all infected pregnant women, regardless of the stage of pregnancy or the stage of the disease, are hospitalized at the Chicago Intensive Treatment Center and given the complete course of treatment, lasting from $7\frac{1}{2}$ to 9 days. For serologic follow-up and supplemental treatment, if necessary they are then returned, ordinarily, to the clinic from which they were referred. Prenatal care may be continued at any of the prenatal clinics and supplemental treatment for syphilis may be secured from any of the venereal disease clinics, or combined prenatal care and antisyphilis treatment may be obtained at either the Municipal Social Hygiene Clinic or

the clinics located in the headquarters building of the Chicago Health Department. The services of the health department nurses are utilized in keeping strict surveillance over the patients to ensure their receiving any necessary supplemental treatment, either from a private physician, from one of the health department venereal disease clinics, or from some other reliable source. Should the patient elect to seek initial treatment from a private physician or from one of the voluntary clinics instead of utilizing the facilities of the health department, she is privileged to do so. Failure to pursue the prescribed treatment, however, will be reported to health department authorities, who are empowered to place the patient in quarantine until she is willing to submit to the specified treatment from a source acceptable to the executive officer of the health department.

The small number of cases of congenital syphilis in children under one year of age reported in Chicago during 1945 and the first part of 1946—only 47 (less than 1 per 1,000)—provides concrete evidence of the value of this health department policy. While the record is gratifying, the rate can and should be reduced to zero. With the modern methods of treatment now available, any case of syphilis in the new-born is a quite unnecessary blot upon the health record of a community such as the Chicago-Cook County area.

MATERNAL AND CHILD HEALTH ACTIVITIES OF VOLUNTARY AGENCIES

The chief voluntary health agencies which provide maternal and child health services in Chicago are the Infant Welfare Society of Chicago, the Chicago Maternity Center, the Visiting Nurse Association of Chicago and the Elizabeth McCormick Memorial Fund. The services available in the outpatient departments of hospitals were not included in this survey, but are said to be considerable.

THE INFANT WELFARE SOCIETY OF CHICAGO The Infant Welfare Society of Chicago (see Chapters 34, 38, and 41) operates 21 clinic centers and schedules 2,105 clinic sessions per year for the care of infants and 2,110 sessions for preschool children. In 1945, 4,776 infants were registered in the former and 6,500 preschool children in the latter. This program, which constitutes the only large-scale preschool health service in Chicago, is pitifully small in comparison with the problem of providing service to the approximately 210,000 preschool children in Chicago and the vicinity who may need this type of care. The society also registered 562 expectant mothers in its clinics during 1945. The type of clinic service provided for both mothers and infants is similar in most respects to that given in the

health department clinics. The immunization clinics held in the Infant Welfare Society centers are staffed by the health department. On the other hand, the work done in the homes is of a more generalized character than that provided by health department nurses. In fact, the nursing program of the Infant Welfare Society of Chicago is generalized more thoroughly than is that of any other nursing service in Chicago.

THE CHICAGO MATERNITY CENTER This center is organized to provide obstetrical services to women in their homes. It not only performs a great service to women in Chicago but also offers a splendid source of instruction to young physicians in the techniques of safe delivery under conditions requiring improvisation. Applications for maternity service by the center in 1945 totaled 2,525, and there were approximately 2,000 deliveries. Cases with serious complications are transferred to certain hospitals in which a limited number of beds are reserved for such cases.

Most of the prenatal care for patients of the Chicago Maternity Center is provided either in health department clinics or in the clinics of the Infant Welfare Society, although the physicians attached to the center do carry on some prenatal work there.

THE VISITING NURSE ASSOCIATION OF CHICAGO Postnatal care is given by nurses of the Visiting Nurse Association to mothers delivered by physicians from the Chicago Maternity Center and to others upon request. Further details as to the policies of the association and the volume of its work are presented in Chapters 34 and 41.

THE ELIZABETH McCORMICK MEMORIAL FUND The Elizabeth McCormick Memorial Fund operates a specialized and intensive program for children in families registered with the Chicago Department of Welfare, Cook County Bureau of Public Welfare (Aid to Dependent Children), and the Family Service Bureau of the United Charities of Chicago. Six pediatricians employed by this agency conduct clinics for children in twelve community centers, three of which are community nursery schools. In 1945 this agency was instrumental in the development of a teaching demonstration which was extended to the pediatric departments of the University of Illinois and the University of Chicago, to St. Luke's Hospital School of Nursing, and to the Chicago Teacher's College. The war nursery schools provided the children used in the teaching demonstrations.

MATERNAL AND CHILD HEALTH CLINICS IN HOSPITAL OUTPATIENT DEPARTMENTS The extent of the prenatal, well-baby, and child health services provided in the outpatient departments of hos-

pitals in Chicago was not determined in this survey which was limited to the care provided by official and voluntary health agencies. It is said to be considerable, although the statistics for services rendered to well mothers and babies may not be separated in all cases from the statistics on treatment services. The services rendered by outpatient department clinics should, however, be kept in mind when considering the total amount of maternal and child health care provided in Chicago.

MATERNAL AND CHILD HEALTH SERVICES PROVIDED BY PRIVATE PHYSICIANS In some sections of Chicago the percentage of mothers under the regular antenatal supervision of obstetricians in their private practices and the percentage of infants under the care of privately practicing pediatricians run very high. The percentage of children who receive private dental care is said to be equally high. Health records of children entering school for the first time indicate that 75 percent of those from neighborhoods enjoying superior economic advantages had been seen regularly each year by a private physician or dentist before they reached school age. It may be assumed also that a similar percentage of expectant mothers are under regular supervision by private physicians during the prenatal period. Wherever the economic level is sufficiently high to permit these practices, they should be encouraged to the maximum extent.

Statistics presented in Chapter 46 indicate that there are usually sufficient beds in Chicago hospitals to meet the demands for maternity patients, in spite of the fact that the maternity hospitals of Chicago serve not only Chicago women but also the majority of the prospective mothers in the suburban communities. Discriminatory admission policies, however, have resulted in a serious shortage of beds for Negro maternity patients. Even for white patients, there may at times be a shortage of maternity beds in certain hospitals, as some hospitals enjoy greater popularity in this type of care than others.

Approximately 96 percent of the 59,343 babies born in Chicago in 1945 were delivered in hospitals, a fact which indicated the extent to which Chicago people recognize the advantages of hospital delivery. The average stay of maternity patients in hospitals at the time of childbirth was eleven days, a far better record than that experienced in many localities, especially during the overcrowding of hospitals incident to the war.

Approximately 2,000 babies are delivered annually through the

facilities of the Chicago Maternity Center; about 500 per year are delivered in homes by midwives. An undetermined, but small, number are delivered by physicians in homes. Through regulation of maternity services in hospitals, the Chicago Board of Health has contributed materially to the elevation of standards. These regulations were adopted with the advice and aid of the Joint Maternal Welfare Committee of Cook County, a group of outstanding obstetricians and others interested in maternal welfare. This committee appointed a subcommittee to review maternal deaths, and by its advice and suggestions to attending physicians and hospitals has, it is believed, raised the standards of obstetrical care in the community.

PLANNED PARENTHOOD

Birth control *per se* has no part in a public health program, but contraception as a means of safeguarding the health and saving the lives of prospective mothers is a factor which cannot be overlooked in a maternal health program. Many women bear children at times when for their own sake they should not be permitted to do so. In those suffering from advanced cases of tuberculosis, kidney diseases, diabetes, and heart diseases the strain of childbearing is such as to hasten premature death. Also, the invalidism and death that result from induced abortions among married women would present an ugly picture if the full truth were known. Obviously, the morbidity and mortality records are unreliable as a source of information relating to the true cause of sickness and death resulting from infected abortions. Deaths from this cause are not charged to maternal deaths, because the patients are not classed as childbearing mothers. According to the testimony of the Planned Parenthood League, 75 per cent of the induced abortions in Chicago involve married women, clearly indicating that pregnancy was not desired. It naturally follows that the potential mothers of unwanted children should have information which would furnish them a choice between harmless contraception and dangerous abortion.

When asked for a statement of its objectives, the Planned Parenthood League submitted the following: (1) to help mothers have healthy babies; (2) to help childless couples who want children to have them; (3) to help public and private health agencies in providing information about spacing and fertility to all married couples who want it; (4) to create an enlightened public opinion on child spacing; (5) to extend knowledge under qualified medical direction

concerning the methods of planned parenthood; (6) to help community hospitals or voluntary agencies establish clinic service.

Although the Planned Parenthood League maintains no independent clinics, another organization known as the Maternal Welfare Centers of Chicago, affiliated with the league, operates five independent clinics. An unaffiliated agency, the Chicago Woman's Aid, maintains two independent clinics. There are also two clinics in Chicago Heights and Evanston.

COOK COUNTY OUTSIDE CHICAGO

All but a small percentage of mothers and babies are said to be under the regular professional care of private specialists in Evanston, Kenilworth, Oak Park, Wilmette, and Winnetka. There is evidence also that to a large extent this situation is true of several other suburban areas. The need for public facilities for maternal and child health services is, therefore, correspondingly reduced.

The extent of clinic services for maternal and child health maintained by health agencies operating in Cook County outside Chicago is summarized in Table 95. The statistics in this table reveal that there are 1,417 regularly scheduled clinic sessions for infants and preschool children in Cook County (exclusive of Chicago) and that approximately 3,444 clinic hours are devoted to these services. The

TABLE 95. AGENCIES IN COOK COUNTY PROVIDING MATERNAL AND CHILD HEALTH SERVICES

| <i>Agencies</i> | <i>Clinic Sessions</i> | <i>Hours per Session</i> | <i>Type of Service</i> |
|---|------------------------|--------------------------|-------------------------|
| Berwyn Health District | 52 | 3 | Immunizations |
| Berwyn Health District | 72 | 2 | Baby and preschool |
| Cook County Department of Public Health | 24 | 3 | Prenatal and postnatal |
| Cook County Department of Public Health | 492 | 3 | Baby and preschool |
| Elmwood Park Health Service | 50 | 1½ | Infant to 18 months |
| Evanston Department of Health | 34 | 2 | Immunization |
| Infant Welfare Society (Evanston) | 147 | 2 | Well-baby |
| Infant Welfare Society (Evanston) | 104 | 2 | Preschool |
| La Grange Community Nurse and Service Association (city operated) | 21 | 2 | Well-baby and preschool |
| Oak Park Infant Welfare Society | 100 | 2½ | Infant |
| Oak Park Infant Welfare Society | 27 | 2 | Preschool |
| Oak Park Infant Welfare Society | 12 | 3 | Immunization |
| Skokie Health Service | 12 | 2 | Baby and preschool |
| Tuberculosis Institute of Chicago and Cook County | 196 | 2-3 | Infant and preschool |
| Wilmette Health Center | 24 | 1½-2 | Well-baby |
| Winnetka Health Department | 50 | 2 | Infant |

number of persons served in these clinics is not established clearly. In five instances no figures were given. The number of admissions specified by five agencies totaled 3,508. Six other agencies gave visits only, totaling 3,059.

Data received from the various health agencies in Cook County outside Chicago mentioned only the twenty-four prenatal and post-natal clinic sessions held by the Cook County Department of Public Health in listing this type of service.

In the rural areas of Cook County, and to some extent in the large municipalities, there is very definite need for more maternal care services.

COMMENT ON CHICAGO AND COOK COUNTY

Although the figures from any one agency involved in maternal and child health service in Chicago seem small, they do, in the aggregate, indicate that approximately 20 percent of the infant population receives attention from public sources. When it is realized that a very high proportion of infants in certain sections of the city are under the care of private physicians, the number served by official and voluntary agencies is rather impressive. The relative adequacy of such service is borne out by the low death rates for mothers and infants. The glaring deficiency is in the area of preschool service, which is almost negligible in comparison with the backlog of potential clients. The health department has been unable to undertake this type of service primarily because appropriations have been lacking.

In Cook County, the health department eventually should absorb the greater part of the clinic activities in the areas under its jurisdiction. To do so, however, the department must first demonstrate its ability to do the job well when once it is undertaken. Caution should be exercised against undertaking too much with too little. The situation presents a challenge to the county health department to expand its nursing and medical staff as rapidly as possible to a level commensurate with its legitimate obligations.

RECOMMENDATIONS FOR CHICAGO AND COOK COUNTY

It is recommended that:

1. The official health agencies in Chicago and Cook County shall make plans for complete coverage by either official or voluntary agencies, for all prospective mothers not under the care of private physicians, and for all children not under the care of private pediatricians, from birth to school age.

2. Planning by official agencies to effect the preceding recommendations shall be carried out in conjunction with voluntary agencies working in the field of maternal and child health services.

3. The voluntary agencies shall be encouraged and assisted by the official health agencies in developing special phases of maternal and child health, such as special teaching demonstrations to student groups, special nutritional studies, child psychology, and parent-child relationship clinics.

4. The official agencies shall maintain close liaison with the work of the voluntary agencies to the end that high and uniform standards may be achieved.

5. In order to merit leadership in maternal and child health services, the official health agencies shall equip themselves with directors of maternal and child health services of such outstanding ability as to command recognition and co-operation from all persons and agencies operating in this field and that such directors shall be given responsibility and authority to develop maternal and child health services within their respective jurisdictions.

6. Approximately 75 to 100 clinics operated by 100 to 150 part-time pediatricians shall be the objective for Chicago, and 15 to 20 clinics for the county, with a like number of part-time pediatricians.

7. Full-time pediatricians shall be employed in the ratio of 1 to 15 part-time men, and their duties shall include not only supervision of the part-time employees but also a systematic program of in-service training.

8. Each clinic shall maintain its own system of family records, retaining the original records in its own file. A master index file of all families should be kept at the district or central headquarters.

9. All the public health nursing programs shall include vigorous follow-up which would provide instructions and demonstration in the home to implement advice given to mothers in the clinics.

10. A concerted effort shall be made toward the ultimate elimination of midwifery.

11. In order to reduce further the incidence of maternal infections and foetal deaths, cognizance shall be taken by both official and voluntary health agencies of the benefits to be derived from planned parenthood.

12. Facilities for delivery service in hospitals shall be made available to all on the basis of need without racial distinctions.

SCHOOL HEALTH SERVICES

by *Dudley A. Reekie, M.D.*, and
K. E. Miller, M.D.

ACHIEVEMENT OF POSITIVE HEALTH in a population is the goal toward which all health programs are directed. No attempt to reach this goal can hope to succeed unless it begins by endeavoring to improve both the personal health and the environment of children from birth throughout their years of school life. For this reason, a well-organized and comprehensive school health service is a vital part of an effective community health program.

Educational authorities can aid the health authorities in their efforts to build a healthful community, because of the close relationships which exist between the schools and the school children and their families; the health authorities can help the schools in their efforts to educate the children by keeping communicable diseases at a minimum, getting children under medical care, maintaining selected clinics which serve the child and his family, and safeguarding the food, water, and milk of the community.

The school health problem in the Chicago-Cook County area is a vast one. The task of teaching more than seven hundred thousand children in this area and helping to keep them fit demands the services of many workers. It calls for a partnership program between educational and health authorities which pivots on and around the teacher. As an accessory to home instruction, that knowledge imparted to the child by the unified instruction of teacher, physician, dentist, nurse, and physical educator in the schools is largely responsible for the development of sound attitudes in school children.

The figures in Table 96 show a total enrollment in the public and private elementary and high schools of Chicago and Cook County during the year 1945 of nearly three quarters of a million children. The 1,200 elementary schools in the area have an enrollment of more than half a million (532,000). Of these, 70.5 percent, or 375,000, are in the public schools, and 29.5 percent, or 157,000, in the private

TABLE 96. NUMBER OF PUPILS, TEACHERS, AND SCHOOLS (PUBLIC AND PRIVATE) IN THE CHICAGO-COOK COUNTY AREA

| AREA | PUPILS | | TEACHERS | | SCHOOLS | |
|------------------------------------|---------|---------|----------|---------|---------|---------|
| | Public | Private | Public | Private | Public | Private |
| Elementary schools | 532,000 | | 22,000 | | 1,200 | |
| Chicago | 309,000 | 125,000 | 15,000 | 4,000 | 400 | 400 |
| Cook County (exclusive of Chicago) | 66,000 | 32,000 | 2,700 | 300 | 300 | 100 |
| High schools | 183,000 | | 7,300 | | 137 | |
| Chicago | 120,000 | 25,000 | 4,300 | 1,600 | 55 | 42 |
| Cook County (exclusive of Chicago) | 33,000 | 5,000 | 1,400 | | 21 | 19 |
| All schools | 715,000 | | 29,300 | | 1,347 | |

schools. Approximately 50,000 children enter school for the first time each year.

For every three children in elementary schools there is one in high school. One school in ten is a high school. Of the 29,300 teachers in all schools in the area, 22,000, or 75 percent, are teaching in the elementary schools.

One school board serves the public schools of Chicago. In Cook County outside Chicago 159 school boards act separately and without uniformity in the development of their school health programs.

The School Code of Illinois, 1945,¹ calls for the introduction of a school physical examination and health promotion program throughout the state. The school authorities are to require all pupils in the public elementary and secondary schools to undergo an entrance physical examination and subsequent examinations not less than every fourth year thereafter. The statistics presented in the following paragraphs indicate to what extent the school authorities in Chicago and Cook County are at present meeting the requirements of the Illinois statute.

In all the elementary schools, public and private, in the Chicago-Cook County area, only 84,000, or 16 percent of the children, are provided routine and systematized medical examination service with follow-up attention by a public health nurse to urge parental action in getting physically defective children under medical care. Of the 84 percent (448,000) without medical and nursing service, 434,000, or 96.9 percent, are in the schools of Chicago. A further breakdown of the figures for Chicago shows 71.2 percent of these children enrolled in the public schools and 28.8 percent in the private schools.

¹ *The School Code of Illinois, 1945*, Article 27, Section 8 (Health Law), p. 208.

For all practical purposes, then, it may be said that both the public and the private schools of Chicago are wholly without a systematized and effective medical and nursing service.

SCHOOL MEDICAL SERVICES IN CHICAGO

The medical service furnished to the Chicago schools by the Chicago Health Department is of an emergency nature in the interest of controlling communicable diseases. The Chicago Health Department employs approximately one hundred physicians on a part-time basis, each with a specified group of schools under his jurisdiction. Each school morning the doctor makes the rounds of his schools to check on children who have returned to school after an absence of two days or more for evidence of communicable disease. Should the presence of a communicable disease be established, health department representatives carry out appropriate isolation and other control measures. Contacts are also placed under surveillance, and bacterial cultures are taken when indicated. The fairly extensive dental program conducted in the Chicago public schools by the Chicago Health Department is described in Chapter 37.

The Municipal Tuberculosis Sanitarium, with the collaboration of the Tuberculosis Institute of Chicago and Cook County, conducts here and there a limited program of tuberculin testing and photo-fluorographing of the children in some of the Chicago schools in order to locate cases of tuberculosis.

SCHOOL MEDICAL SERVICES IN COOK COUNTY (EXCLUSIVE OF CHICAGO)

School health services are provided to the 83,000 elementary school children in Cook County outside Chicago by the Cook County Department of Public Health, the Tuberculosis Institute of Chicago and Cook County, boards of education and local health departments in Cicero, Evanston, Oak Park, and Winnetka, and local health departments in Berwyn, Skokie, and Stickney. The boards of education in Cicero, Oak Park, Evanston, and Winnetka spend a total of \$115,000 to employ 64 physicians and 72 nurses. Table 97 presents statistics on the number of schools, the number of teachers employed, and the number of pupils in both public and private schools served by each of these agencies.

The public schools outside Chicago are not included as a group in an organized school health service program. One hundred twenty-six

TABLE 97. SCHOOL HEALTH SERVICES FOR ELEMENTARY SCHOOLS IN COOK COUNTY (EXCLUSIVE OF CHICAGO)

| AGENCY PROVIDING SERVICE | NUMBER OF SCHOOLS | | NUMBER OF TEACHERS | NUMBER OF PUPILS | |
|---|-------------------|----------------|--------------------|------------------|----------------|
| | <i>Public</i> | <i>Private</i> | <i>Public</i> | <i>Public</i> | <i>Private</i> |
| Cook County Department of Public Health | 126 | 19 | 575 | 16,000 | 4,000 |
| Tuberculosis Institute of Chicago and Cook County | 73 | 29 | 680 | 18,000 | 7,000 |
| Boards of education | 82 | .. | 1,100 | 24,000 | ... |
| Local health departments | 23 | 23 | 330 | 8,000 | 6,000 |
| All types | 304 | 71 | 2,685 | 66,000 | 17,000 |

are served by the Cook County Department of Public Health. Seventy-three are included in a plan worked out between the county health department and the Tuberculosis Institute of Chicago and Cook County. Under this plan 27,801 children were weighed and measured in 1945, 17,609 were tested for vision, 43,894 were inspected for infectious conditions, and 3,710 were examined by physicians. Eighty-two schools individually employ public health nurses and pay private physicians to examine the 24,000 children enrolled. Working relations with local health departments have been developed by twenty-three schools. In these schools, on an average, 50 per cent of the children entering school for the first time had received a prior medical examination, a parent having been in attendance at the examination of approximately half the group.

School health services are provided for children in the parochial schools of Evanston, Oak Park, Cicero, Berwyn, and Winnetka, mainly by the municipal health departments. The quality, scope, and purpose of the school medical services in each of these communities are limited only by the funds, the staff, and the direction available. Different records exist in each community, however, and there is no provision for sending health records from one school to another when children are transferred. These health records are primarily for counting purposes, e.g., the number of children examined, the number and proportion of below-par children, and those conditions discovered that place a child in the below-par group. Efforts to have these conditions corrected are the function of the public health nurse and the teachers working with the child and the parent. All defects corrected are counted from these records and are listed in the annual reports of the individual departments as accomplishments in the year's work.

The percentage of children in these communities who have been immunized against smallpox, diphtheria, and whooping cough upon admission to schools is gratifyingly high, averaging more than 50 percent and reaching 80 percent in some communities. During the grammar school years these percentages are increased further; they climb as high as 90 percent in Evanston and Oak Park and in other communities served directly by the Cook County Department of Public Health.

Most of the public school authorities and a few of those in charge of private schools require teachers to secure health certificates before appointment. X-ray examinations to exclude the possibility of tuberculosis are, however, seldom a requirement. Some school boards require their teachers to have periodic physical examinations during their terms of service. In Oak Park physical examinations are required annually; in Evanston, at three-year intervals. In Oak Park a psychiatric examination is part of the routine examination of school teachers.

In 1944 the state of Illinois published a bulletin outlining a basic plan for health education and the school health program, which is now a factor in developing more uniform health practices and recording programs throughout the schools.

Where health and school authorities have developed and operated in partnership a school health service such as that found in the parochial schools in Evanston, Oak Park, Berwyn, Cicero, and Winnetka or in the public schools of Skokie, Melrose Park, and Chicago Heights (the last two provided by the Chicago Tuberculosis Institute) a progressive doctor-nurse-teacher-parent-child relationship has grown up which is of the utmost value. There is evidence that these programs are increasingly well done and that they constitute a valuable educational experience for all the participating individuals.

ESSENTIAL ITEMS IN AN EFFECTIVE SCHOOL HEALTH PROGRAM

For the sake of the fifty thousand children in and around Chicago entering school each year for the first time, parents and teachers must have sound guidance during this initial period. Many thousands of children in upper grades are developing new problems as they grow older and need medical referrals. These children, their parents, and their teachers, therefore, must have access to competent health counsel from the start to the finish of their school careers.

All school physical examination sessions for the children should

involve both parents and teachers if the program is to be worth while. Parents co-operate when they understand fully the importance of the child's health problem. Prompt and determined action by the parent eliminates the necessity for repeated home visits by the nurse or written and verbal reminders to prod the parents and urge them into action. The teacher is better able to understand the child's attitude toward his schoolwork, his home, and his friends in terms of behavior symptoms when she fully understands his health problems.

The records of all physical examinations and consultations at these school clinic sessions should be kept on forms on which the three professional people involved, doctor, nurse, and teacher, can record facts, findings, and suggestions about each child's health problem. Each individual record should be cumulative and should follow the child from grade to grade and from school to school (public or private), just as his scholastic record does.

A good school physical examination at these clinic sessions requires a minimum of fifteen minutes. Screening examinations or inspections can proceed more rapidly and are used when some special condition or situation exists.

School health services include more than the periodic examination of school children and school teachers, follow-up of those requiring medical treatment, facilities for providing such treatment, and special classes for handicapped children. An especially important adjunct to medical treatment is guidance in child psychology and psychiatric service. School nutrition services should do far more than provide school lunches. All these services have been instituted to a certain degree in the school systems of Chicago and Cook County, but in no instance have they been developed to the fullest extent.

The problem of a satisfactory school environment also deserves consideration. Playgrounds should be not only ample in space but also free from all hazards to sanitation and safety. Not all schools in the Chicago-Cook County area meet the second requirement. While no inspections of school buildings were made to determine their safety from the standpoint of fire hazard, this matter can be checked readily with the officials of the Chicago Fire Department. Observations by survey personnel of the need for fire protection in some of the Chicago hospitals, leads to the assumption that similar deficiencies may exist in the Chicago schools at least (see Chapter 41).

Within the schools, ventilation, heating, and the sanitation of school lunchrooms and services are problems which require techni-

cal study and observation. The results of recent research have revealed the special significance of seating and lighting to an extent which may revolutionize all previous concepts of the importance of these factors in the child's school environment. Studies made by the Texas State Department of Health with respect to lighting, which also involved seating arrangements, have attracted nation-wide attention from lighting experts, and the practical application of the new principles in lighting has produced phenomenal results. While this development is considered still in an experimental stage, the prospects are so favorable as to command the keenest interest of all school and health authorities in its ultimate possibilities.

Health education should be placed in the foreground of a school health policy. Health propaganda against particular diseases has its place, but a sound health education policy must aim at the promotion of positive health.

The modern conception of health embraces the whole human personality, physical and mental, and health must be regarded as a way of living. A health education program must convince each child (and his parents) of the necessity for observing fundamental rules and developing such habits, attitudes, and ideals as will promote physical, mental, and emotional well-being (see Chapter 39).

PROVISION OF SERVICE BY SCHOOL BOARD VERSUS HEALTH DEPARTMENT

Some divergence of opinion exists between health and educational authorities as to which agency should be responsible for the health services in the schools. Educational authorities in some localities have developed complete and independent medical, nursing, and dental services in addition to those concerned with health and physical education which properly belong under their control. The argument in support of this arrangement is that only nurses, psychologists, and doctors who are intimately associated with children in their school environment can understand child problems and child reactions. While this argument may have some merit, other factors swing the balance heavily in the other direction.

Health authorities, on the other hand, are convinced that health programs conducted by the schools tend to stress the muscular development of children rather than their complete physical and mental mechanisms. Be that as it may, the school system can exercise jurisdiction over the child only a portion of the year, while the health

department can provide supervision during the entire year. Moreover, it is unsound to attempt to build a health program around one particular segment of the population. The school child cannot be singled out from the family and the community to which he belongs and safeguarded against health hazards peculiar to his age without at the same time safeguarding the homes and the community. Obviously, protection of homes and community is a responsibility of the health department.

Undoubtedly, there should be close co-operation between the health and educational authorities in the conduct of a health program in the schools, with each assuming its special responsibilities and duties. There is no reason, however, why one agency should preempt the field of the other. Proper co-ordination of efforts will yield sufficient work for each agency in its own specialized field. It may, therefore, be understood, without formal recommendation, that health departments should develop school health services worthy of the respect and the collaboration of the school authorities, and that school authorities should concentrate their efforts upon educational phases, both didactic and physical.

Whichever agency assumes responsibility for the physical examination of school children, the program outlined must be predicated upon facilities adequate in quantity and in quality to take care of the defects found. Normally, children with defects should be referred to private physicians for remedial care. The presence and participation of the parent at the time of the examination will go a long way toward solving this problem as well as obviating the necessity of repeated follow-up visits by nurses; nevertheless, the health department must be prepared to carry out a serious follow-up program wherever it is needed, and clinic service must be arranged for children whose parents cannot afford to pay for the necessary corrective work at private rates.

Finally, any effort to build a health program upon and around the school child will inevitably result in parallelism, duplication, and overlapping of the functions and the duties of the authorities charged by law with the administration of health affairs.

PROPOSED PLAN FOR SCHOOL HEALTH SERVICES

It is proposed that health departments, rather than the school system, provide all school medical, nursing, and dental services in Cook County and in other full-time health jurisdictions, as well as in Chi-

cago. It will not be necessary to allocate any personnel especially for work in the schools. Maintenance of a separate group of school nurses in the health department, for example, is not advocated. On the contrary, it is proposed to have a generalized public health nursing program for the family as a unit rather than one in which a particular group of nurses is assigned to each nursing specialty.

PERSONNEL REQUIREMENTS FOR CHICAGO In Chicago the total public school population is 429,000: elementary schools, 309,000; high schools, 120,000. On the basis of 1 nurse for each 2,000 children, 215 nurses would be required. The initial figure, however, may be set at 200. In calculating the over-all number of nurses required by the Chicago Health Department, therefore, 200 nurses are added to the total estimate. They would not, however, confine their duties to school work. In accordance with the family unit plan, each of the field nurses of the department, excepting clinic nurses, would be assigned to work in a given territory, which would include one or possibly two schools. The nursing problems in the schools and for school children in their homes would be handled by the nurse in that territory along with other public health nursing problems in the children's homes. In this way, the school nursing activities would not be confined to 200 nurses, but would be distributed among at least 550 health department nurses.

Requirements for health department medical officers are estimated in a similar manner. In practice, it is found satisfactory to utilize the services of part-time physicians in school work, under the supervision of full-time physicians. On the basis of 1 full-time or 2 part-time physicians for each 5,000 children, the requirement for the Chicago public schools would be 86 full-time physicians, or 172 on a part-time basis. A fair start, however, could be made with 50 full-time or 100 part-time physicians. On the basis of 1 full-time supervisor for each 10 part-time physicians, 10 full-time supervisors would be required. Assuming 2 part-time physicians to be the personnel equivalent of 1 on full-time, the equivalent of 60 full-time physicians would be needed.

The need for dentists is rated somewhat lower than for physicians. Counting 1 part-time dentist to each four public schools in Chicago, averaging approximately 950 children each, the total requirement would be 114 part-time dentists, or the full-time equivalent of 57. Because of the present lack of dental equipment it would be practical to start with only half this number. The immediate dental re-

quirements would, therefore, be approximately 58 part-time dentists, representing 29 full-time equivalents, and approximately 6 full-time supervisors. In the case of both physicians and dentists, as in the case of nurses, these personnel requirements would be added to those needed by the health department for other purposes. The physicians could be utilized in a limited way for other duties in the health department, as, for instance, in connection with immunization clinics, especially during the summer months. The dentists, likewise, could concentrate their efforts during the summer months principally upon the care of preschool children.

The estimation of personnel requirements for school work is of special importance as a means of arriving at cost, in order to integrate this work with the Chicago Health Department program. The total expenditures for personnel may be roughly estimated at \$991,400, distributed as follows:

| <i>Number and Type</i> | <i>Average Salary</i> | <i>Total Salaries</i> |
|------------------------------------|---------------------------|---------------------------|
| Nurses (200) | \$3,000 | \$600,000 |
| Full-time medical officers (50) | 4,200 | 210,000 |
| Full-time medical supervisors (10) | 5,000 | 50,000 |
| Full-time dentists (29) | 3,600 | 104,400 |
| Supervising dentists (6) | 4,500 | 27,000 |

This number of personnel would make possible the beginning of a realistic school health program. As the program demonstrates its worth, a demand for increased personnel may be anticipated which would approach the ideal rather than the minimal number suggested at the start.

Since a school health program is primarily a service to the school system, the Board of Education should bear the major cost, underwriting the health department budget to the extent represented in the estimates just presented.

This discussion concerns only the public schools in Chicago. Since the private school enrollment in both elementary and high schools totals 150,000, the indicated need for nursing service would be 75; for part-time physicians 60, with 6 supervisors. The 442 private schools in Chicago serve approximately three eighths as many children as the public schools, the number of dentists needed therefore, would be three eighths the number required for the public schools, the equivalent of 11 full-time dentists, or 22 on part time together with 2 supervisors.

A much wider use will be made of private physicians and dentists in the private schools than in the public ones. Conservative estimates indicate that arrangements by parents for care of their children by private physicians would take the place of at least one third of the required school health services. To meet the requirements of the private schools, the health department, therefore, would need to add to its personnel approximately 50 nurses, 40 part-time or 20 full-time physicians, with 4 supervisors, and 14 part-time dentists, with 1 supervisor. The cost would be paid from health department funds. The total salaries for this group would amount to \$283,700, distributed as follows:

| <i>Number and Type</i> | <i>Average Salary</i> | <i>Total Salaries</i> |
|----------------------------|---------------------------|---------------------------|
| Nurses (50) | \$3,000 | \$150,000 |
| Physicians (20) | 4,200 | 84,000 |
| Supervising physicians (4) | 5,000 | 20,000 |
| Dentists (7) | 3,600 | 25,200 |
| Supervising dentist (1) | 4,500 | 4,500 |

These estimates, like those presented for the public schools, represent minimal rather than ultimate requirements.

PERSONNEL REQUIREMENTS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO) An estimation of additional personnel required in Cook County for the provision of school health services would be calculated as for Chicago. Briefly recapitulated, the requirements for public schools would be 50 nurses; 40 part-time or 20 full-time physicians, plus 4 full-time supervisors; and 14 part-time or 7 full-time dentists, with 1 full-time supervisor. These calculations cover the number of personnel needed to provide school health services to all public schools in Cook County outside Chicago, including those in communities with full-time health departments. For this and other reasons, the calculated requirements might be scaled down by possibly as much as one-third without affecting the service adversely. School authorities in Cook County would be expected to pay the salaries of this group of personnel.

Estimated requirements for the private schools outside Chicago, with a total enrollment of 37,000, would be 19 nurses, 14 part-time or 7 full-time physicians, and approximately 5 part-time dentists. The Board of Commissioners of Cook County would be responsible for providing the funds needed to pay this group of personnel.

TEMPORARY SERVICE BY VOLUNTARY AGENCIES Until the school

health service program outlined can be put into operation, one or more of the voluntary agencies would have an excellent opportunity to organize and operate a temporary "pilot" service along these lines in selected localities in Chicago and Cook County. Parts of the proposed program thus could be started almost immediately on a demonstration basis.

RECOMMENDATIONS

It is recommended that:²

1. School medical examinations, as required by state law, shall be extended promptly to all public schools in the Chicago-Cook County area.

2. To this end, each health department in the Chicago-Cook County area shall initiate working relationships with the respective educational authorities for planning, executing, and supervising a school health service.

3. School principals, physicians, dentists, and nurses shall be invited to collaborate in the preparation of manuals describing policies and practices to be pursued in the school health service.

4. School medical examinations shall include both public and parochial (denominational) schools.

5. As a guide to personnel requirements, one full-time physician in a supervisory capacity shall be employed for every ten part-time physicians engaged in the examination of school children.

6. Part-time physicians shall be expected to conduct daily three-hour sessions for the forty weeks of school, and during such sessions each doctor shall be expected to examine a maximum of ten children, to make adequate explanations of conditions found to accompanying parents so as to inspire their intelligent co-operation, and to develop co-ordinated interest and action on the part of teachers and nurses.

7. On the basis of 200 three-hour sessions per school year for each part-time physician, 100 part-time physicians shall be required in the Chicago-Cook County area to conduct 200,000 examinations annually in order to give each child a physical examination on entering school and at each four-year interval thereafter.

8. As a necessary adjunct to the program for physical examination of school children (a) the respective health departments shall be

² These recommendations relate only to the medical aspects of school health service. Nursing, dental, and sanitation activities are discussed in the chapters on these subjects.

prepared to carry out an intensive follow-up campaign wherever necessary to induce parents to secure corrective treatment for their children, and (b) clinic or hospital accommodations shall be provided for children suffering from remediable physical handicaps whose parents are unable to pay the cost of corrective services at private rates.

9. In Chicago alone, the requirement for part-time physicians shall be approximately 75 percent of the total, and for the county outside Chicago, 25 percent.

10. There shall be employed in a supervisory capacity for the public schools, approximately one full-time pediatrician for each ten part-time physicians, a total of seventeen for Chicago and four in the county outside Chicago. The duties of each pediatrician would include (a) summarizing the most urgent medical needs of the school children under his supervision; (b) assuming responsibility for planning school health programs to meet the needs of specific schools; (c) participating in teachers' meetings where health matters are concerned; (d) planning the work of his medical staff so as to maintain a high standard of efficiency; (e) directing in-service training programs for members of his staff; participating in conferences with the local health department, local physicians, parent-teacher organizations, and other civic groups. Approximately six supervising dentists would be needed for the public schools in Chicago and 1 for the Cook County schools.

11. Each child's school health record shall be cumulative and shall follow him from grade to grade, as do other scholastic records.

12. A report of a physical examination of a school child, made by a private physician, shall be considered an acceptable record, provided it is rendered on a form suitable for inclusion in the child's cumulative health record.

13. Adequate quarters for the accommodation of doctor, dentist, and nurse, equipped with telephone service, shall be set aside in each school specifically for the school health service.

INDUSTRIAL HEALTH AND HYGIENE SURVEY

by *Robert H. Flinn, M.D.*

THIS SURVEY of industrial health and hygiene in the Chicago-Cook County area had as its purpose the determination of the magnitude and the nature of industrial health and hygiene problems in the industrial establishments in the area and the adequacy of the official and nonofficial services provided. The health and efficiency of the industrial workers in the population are of outstanding importance, since their activities constitute the bulwark of production in peace and war and they themselves form the economic backbone of the country. Their earnings are the sole source of income for many millions of families.

Because of the nature of their work, industrial workers in some industries are exposed to health hazards which may result in disease. The need to determine the causes of occupational diseases and to establish measures for their prevention stimulated the development of industrial hygiene activities throughout the civilized world and continue to be most important problems in many industries. As knowledge of occupational diseases increased and methods of prevention brought them under better control, it was discovered that industrial workers suffered many more illnesses of a general or non-occupational nature than of an occupational type. Absenteeism on account of sickness is an important economic and production problem generally. For example, in a public utility,¹ male workers lost an average of 14 days per year and female workers lost an average of 15½ days per year because of sickness during 1944. Throughout the nation, it is estimated that from one to one and one-half million workers are absent daily from work because of sickness or injury.

It is recognized generally that an industrial hygiene program can function adequately only if it brings the whole program of public

¹ United States Public Health Service, *Annual Report of the Federal Security Agency*, Section IV, Federal Security Agency, 1945, p. 120.

health to the workers. They can be reached effectively and efficiently in groups at their places of work, just as health work for school children is conducted most effectively in the schools. In large plants, many industrialists have found it decidedly worth while to maintain adequate medical and health services for their workers. An official agency, integrated with all other health activities, should function for the multitude of small plants in bringing or making available a well-balanced program for the protection and general promotion of health.²

A survey of the factory health programs in 2,064 plants made by the National Association of Manufacturers³ in 1940 revealed the following significant facts.

Health programs have proved their worth to the companies instituting them.

a. An estimate on the basis of reductions in various health hazards reported in this survey revealed that a health program saves the average 500-employee plant \$5,611 net per year.

b. All but 5 of a total 1,625 respondents considered their programs paying propositions.

c. Over 90 percent of those replying indicated reductions in accident frequency, occupational disease, absenteeism, and compensation insurance premiums.

d. Between 85 percent and 90 percent indicated reductions in labor turnover, in addition to 83 percent which reported a good effect on their relations.

e. Specific percentage reductions as follows were reported:

| | |
|--------------------------------|-------|
| accident frequency | 44.9% |
| occupational disease | 62.8% |
| labor turnover | 27.3% |
| absenteeism | 29.7% |
| compensation insurance premium | 28.8% |

Detection, evaluation, and control of conditions hazardous to health in industrial establishments are, of course, essential, but proper design and maintenance of equipment and the knowledge of the safe handling of possibly harmful materials are fundamental in preventing occupational diseases. It is also essential that the facts be determined concerning the physical and mental capacities of new workers, that they be assigned to suitable work which they can do safely and efficiently, and that their health be supervised and main-

² United States Public Health Service, *Manual of Industrial Hygiene*, Philadelphia, W. B. Saunders Co., 1943.

³ Committee on Healthful Working Conditions, *Industrial Health Practices*, New York, National Association of Manufacturers, 1941, p. 14.

tained while on the job. Proper engineering control is required for the environmental phases of this problem, and adequate medical supervision is necessary for their health care.

The active co-operation of plant management and labor organizations is a basic requirement in an effective and successful program. Management should recognize and underwrite those aspects of health protection and promotion for which it is responsible, legally and morally, and should co-operate with other groups in developing activities for which it is not responsible. Labor groups must accept responsibility for participating actively in the health program and should share in the planning and execution of its various phases.

Until all large plants recognize the desirability of organized health services and the small plants, which comprise the vast majority of industrial establishments, are in a position to pool their resources for organized medical, nursing, and engineering services, an effective and practicable health program for employees can be achieved only by utilizing freely the services of official agencies concerned with industrial hygiene and of voluntary agencies interested in the field. Consultation, advice, and often direct services are available from the industrial hygiene divisions of the U. S. Public Health Service, from state and sometimes local health departments, from official and non-official nursing organizations, and from insurance companies, universities, medical societies, and medical and engineering consultants.

THE PROBLEM IN THE CHICAGO-COOK COUNTY AREA

Illinois is the third largest industrial manufacturing state in the United States. Only New York and Pennsylvania exceed it in the value of its products. The production record of Chicago and Cook County alone placed this area above California, which ranks as the seventh largest industrial state. In 1939 more than two-thirds (9,126) of the 12,980 manufacturing plants in Illinois were located in the Chicago-Cook County area.⁴ The 543,578 employees of manufacturing industries in this area comprised 66.2 percent of the 821,489 persons in the state engaged in this type of work in 1939.⁵ It is obvious, therefore, that the health and hygiene problems which deal with the protection and promotion of industrial workers' health deserve spe-

⁴ United States Bureau of the Census, *Manufacturers, 1939*, Department of Commerce, 1942, III: 235.

⁵ According to the *Illinois Labor Bulletin* (July, 1946, p. 5), the U. S. Bureau of Labor Statistics estimated that there were 1,074,500 employees in Illinois manufacturing plants on May 15, 1946, a 33 percent increase over 1940. Of these, 874,000 were production and related workers.

cial consideration in planning over-all health programs, both present and future, for this important industrial area.

Many of the larger industrial establishments in the area (those with 1,000 or more employees) have more or less well-organized employee industrial health services. Many small plants with less than 250 employees, and practically all those with less than 100, on the other hand, have not yet developed adequate plans. Since 96.5 percent of all manufacturing industries in Illinois in 1939 belonged in the group employing less than 250 wage earners,⁶ 90.8 percent employed less than 100, and 83.5 percent less than 50, the problems of the smaller plants are clearly of great importance. The fact that 51.3 percent of the wage earners in 1939 were employed in plants with more than 250 wage earners does not detract materially from the obviously great need for the development of industrial health services in the smaller plants. This problem is discussed in detail in presenting the situation in the Chicago-Cook County area.

The following percentage distribution of Illinois manufacturing establishments⁷ according to the number of wage earners and the percentage of wage earners employed in the specified groups indicates the importance of the industrial health problems of the smaller plants.

| <i>Classification by Number of Wage Earners</i> | <i>Percentage of Industrial Plants</i> | <i>Percentage of Wage Earners Employed</i> |
|---|--|--|
| No wage earners | 5.6 | .0 |
| 1 to 5 | 39.3 | 2.3 |
| 6 to 20 | 25.3 | 6.2 |
| 21 to 50 | 13.3 | 9.5 |
| 51 to 100 | 7.3 | 11.4 |
| 101 to 250 | 5.7 | 19.3 |
| 251 to 500 | 2.2 | 17.0 |
| 501 to 1,000 | 0.9 | 13.1 |
| 1,001 to 2,500 | 0.3 | 11.0 |
| 2,501 or more | 0.1 | 10.2 |
| <i>All establishments</i> | 100.0 | 100.0 |

⁶ *Manufacturers, 1939* defines wage earners in manufacturing plants as "generally speaking, those who perform manual work, using tools, operating machines, handling materials and products, and caring for the plant and its equipment. They comprise both time and piece workers. Working foremen and 'gang and straw bosses' are treated as wage earners, but foremen whose duties are primarily supervisory are classified as salaried employees."

⁷ *Ibid.*, Table 5.

Even though about half the wage earners (51.3 percent) were employed in plants with more than 250 employees, it is, nevertheless, obvious that there is great need for the development of industrial health services in the 12,518 smaller plants which employ almost as many (48.7 percent).

SCOPE OF SURVEY

Within the three-month period allotted for the survey of industrial health services in the Chicago-Cook County area, described in this chapter, it was impossible to obtain information from all the 9,126 plants reported in the 1939 census of manufacturers and from those established since. It is believed, however, that the 1,399 plants and the 594,455 employees surveyed by questionnaire and in some cases by personal visits also constitute an adequate sample upon which to base a description of the industrial health and hygiene services and needs of the area.⁸ The employees represent 37 percent of the gainfully employed persons in the Chicago-Cook County area. About 69 percent were male, and 31 percent, female.

Industries which completed questionnaires included 1,217 manufacturing and mechanical plants, employing 421,204 persons, 2 plants engaged in the extraction of minerals, with 613 employees, and 180 firms engaged principally in wholesale and retail trade, transportation, and public service, with nearly 180,000 employees. Plants in Chicago totaled 1,166, or 83.3 percent, of the number surveyed, and elsewhere in Cook County, 233, or 16.7 percent. Of the 594,455 employees in the surveyed plants, 498,562, or 83.87 percent, worked in Chicago plants, and 95,893, or 16.13 percent, in plants located elsewhere in Cook County. Table 98 presents a classification of the plants by industry, showing the percentage of plants and of employees in each group.

The largest number of plants surveyed (516) were in the iron and steel industry. Other industries represented by more than one hundred plants were: chemical and allied, 143; paper and printing, 135; trade, 115. Industries represented in the survey by from 45 to 64 plants were: personal service, 45; clothing, 56; nonferrous metal industries, 56; lumber and furniture, 64; and miscellaneous manufacturing, 64.

The plants in the iron and steel industries employed the largest number of persons, 253,190. Only two other industries employed more than 50,000 persons: transportation, 65,016, and public utility.

⁸ The plan and scope of survey are described on pages 1246-1250.

TABLE 98. PERCENTAGE OF PLANTS SURVEYED AND TOTAL PERSONS EMPLOYED, BY TYPE OF INDUSTRY

| <i>Type of Industry</i> | <i>Percentage of Total Plants Surveyed</i> | <i>Percentage of Total Persons Employed</i> |
|------------------------------|--|---|
| Extraction of minerals | 0.2 | 0.10 |
| Manufacturing and mechanical | 87.0 | 70.68 |
| Chemical and allied | 10.2 | 3.89 |
| Clay, stone, and glass | 2.0 | 0.47 |
| Clothing | 4.0 | 1.67 |
| Food and allied | 8.9 | 7.39 |
| Iron and steel | 36.9 | 42.59 |
| Nonferrous metal industries | 4.0 | 2.12 |
| Leather | 1.4 | 1.26 |
| Lumber and furniture | 4.5 | 1.24 |
| Paper and printing | 9.7 | 6.52 |
| Textiles | 0.8 | 0.49 |
| Miscellaneous manufacturing | 4.6 | 3.04 |
| Personal service | 3.2 | 1.90 |
| Trade | 8.2 | 7.80 |
| Transportation | 1.2 | 10.94 |
| Public utilities | 0.2 | 8.58 |
| All industries surveyed | 100.0 | 100.0 |

ties, 51,019. There were 46,343 persons employed in trade; 43,806 in plants engaged in food and allied industries, 38,730 in paper and printing, 23,160 in chemical and allied industries, and 18,092 in miscellaneous manufacturing. The number of employees in the lumber and furniture, leather, clothing, personal service, and metal industries ranged from approximately 7,400 to 12,600. Plants in the clay, stone, and glass industries and the textile plants each employed between 2,800 and 2,900 persons.

Forty-five percent of the plants surveyed were in the group employing from 51 to 250 persons. The percentage distribution of the plants by number of employees was as follows:

| <i>Size of Group (By number of employees)</i> | <i>Percentage of Plants (In each group)</i> |
|---|---|
| All plants | 100.00 |
| 1-5 | 2.65 |
| 6-20 | 9.44 |
| 21-50 | 17.44 |
| 51-100 | 20.37 |
| 101-250 | 24.80 |
| 251-500 | 10.58 |
| 501-1,000 | 7.65 |
| 1,001-2,500 | 4.50 |
| 2,501 and more | 2.57 |

The information obtained from the completed questionnaires and through personal visits is discussed in this chapter and the following chapter under the main headings: industrial medical services, plant operations and exposures to health hazards, the occupational disease problem, industrial hygiene activities of official agencies, and activities of nonofficial agencies.

PLANT HEALTH AND MEDICAL PERSONNEL Of outstanding interest to those concerned with the adequate development of industrial health and medical services within plants is the provision of full-time, or regularly scheduled part-time, services of physicians and nurses. The findings of this survey indicate that nine tenths of the 1,399 reporting plants made no provision for the services of either full-time or part-time physicians and about half had no arrangements of any kind. Allowing roughly for possible duplications, about three fourths of the plants had no provision for industrial nursing services.

Table 99 shows the number of physicians and nurses reported by

TABLE 99. NUMBER OF PHYSICIANS AND REGISTERED NURSES AVAILABLE
(BY SIZE OF PLANT)

| PLANTS EMPLOYING PHYSICIANS | | | | | | |
|------------------------------------|----------------|--|---------------|--|---------------|--|
| NUMBER OF EMPLOYEES | <i>Plants</i> | <i>Full-time Physicians</i> | <i>Plants</i> | <i>Part-time Physicians</i> | <i>Plants</i> | <i>On-call Physicians</i> |
| 1-5 | .. | .. | .. | .. | 6 | 7 |
| 6-20 | .. | .. | .. | .. | 38 | 41 |
| 21-50 | .. | .. | 1 | 1 | 69 | 83 |
| 51-100 | .. | .. | 1 | 2 | 103 | 144 |
| 101-250 | .. | .. | 15 | 16 | 167 | 248 |
| 251-500 | 1 ^a | 2 | 13 | 17 | 86 | 141 |
| 501-1,000 | 1 | 1 | 22 | 27 | 76 | 139 |
| 1,001-2,500 | 8 | 11 | 24 | 33 | 39 | 88 |
| 2,501 & more | 19 | 52 | 30 | 120 | 14 | 195 |
| All indust ies | 29 | 66 | 106 | 216 | 598 | 1,086 |
| PLANTS EMPLOYING REGISTERED NURSES | | | | | | |
| | <i>Plants</i> | <i>Full-time Registered Nurses</i> | <i>Plants</i> | <i>Part-time Registered Nurses</i> | <i>Plants</i> | <i>On-call Registered Nurses</i> |
| 1-5 | .. | .. | .. | .. | .. | .. |
| 6-20 | .. | .. | .. | .. | .. | .. |
| 21-50 | .. | .. | .. | .. | 6 | 7 |
| 51-100 | 1 | 1 | 1 | 1 | 4 | 7 |
| 101-250 | 29 | 32 | 3 | 3 | 10 | 12 |
| 251-500 | 55 | 66 | 5 | 7 | 9 | 16 |
| 501-1,000 | 64 | 89 | 6 | 6 | 10 | 10 |
| 1,001-2,500 | 56 | 145 | 1 | 1 | 4 | 7 |
| 2,501 & more | 33 | 223 | 2 | 6 | 2 | 6 |
| All industries | 238 | 556 | 18 | 24 | 45 | 65 |

^a A pharmaceutical house.

the 1,399 plants, classified by the size of the plants in terms of number of employees.

No plants with 250 employees or less reported full-time physicians, and only two of those in the 251-1,000 categories. The smaller of these two manufactured drugs and vaccines. Part-time physicians were reported by none of the plants with 20 employees or less and by only one plant each in the 21-50 and 51-100 categories. With these exceptions, all full-time physicians were reported by plants with more than 1,000 employees and all part-time physicians by those employing more than 100 persons.

The effective lower limit for the employment of full-time physicians in this area appears to be 1,000 employees. Eight of the 63 plants in the 1,001-2,500 category reported 11 full-time physicians; 19 of the 36 plants in the more than 2,500 category reported 52. A total of 66 full-time physicians was reported by 29 plants.⁹

Part-time physicians were more numerous. There were 216 reported by 106 plants, including 16 of the largest plants, which reported full-time physicians also. All but three of these physicians were reported by plants with more than 100 employees. The percentage of plants employing part-time physicians increases rapidly as the number of plant employees increases. While only 4 percent of the plants in the 101-250 category reported part-time physicians, their employment was reported by 9 percent of the plants in the 251-500 category, 21 percent of those in the 501-1,000 category, 38 percent of those in the 1,001-2,500 category, and 83 percent of the plants with more than 2,500 employees.

On-call physicians were tabulated and are shown in Table 99, but such an arrangement generally is not considered a satisfactory medical service, since no medical supervision is involved except that specifically requested from time to time for accidental injuries, and in some instances for pre-employment examinations, sometimes at the plant, but oftener in the physician's office or at an industrial clinic. In other words, such an arrangement is frequently no more conducive to active plant health supervision than is the usual possibility of calling any physician in an emergency without any special prearrangement. The available services of 1,086 on-call physicians were reported by 598 plants. The only duplication between this

⁹ So far as can be determined, this is a complete count of full-time industrial physicians in the Chicago-Cook County area, except for one physician (the plant employing this physician was not included in the survey).

group of plants and those employing full-time or part-time physicians was the relatively small number of the plants in the latter group which use on-call consultants, usually specialists.

Registered nurses on a full-time basis were employed with increasing frequency in plants with more than 100 employees, as Table 99 brings out. The percentage of plants in the different categories over 100 which reported nursing services rises as follows: 101-250 employees, 8 percent; 251-500 employees, 37 percent; 501-1,000 employees, 60 percent; 1,001-2,500 employees, 89 percent; 2,501 employees and over, 92 percent. In all, 556 registered nurses were employed by 238 of the reporting plants, but almost half these nurses were employed by 33 plants in the largest category. Eight times as many plants employed full-time nurses as were employing full-time physicians.

Only 24 part-time registered nurses were employed by 18 plants. Six of these plants, which also had full-time nurses, are included in both columns in Table 99. On-call nurses were also the exception. Only 65 were employed in 45 plants.

From the viewpoint of the protection and conservation of the worker's health, it is more important to know the proportion of workers to whom medical services and facilities are available than the proportion of plants. This point is especially significant, because the 1939 census of Illinois manufacturers reported that 70.6 percent of wage earners were employed in the 9.3 percent of plants in Illinois with more than 100 employees. Table 100 shows the percentage of workers receiving specified full or part-time professional services in the 1,399 reporting plants classified by size. Subtotals are given for plants employing more than 100 workers and for those employing 100 or less, hereafter called "large" and "small" plants.¹⁰

In the large plants 32.7 percent of the employees had the services of a full-time physician (see Table 100). In the small plants none had such services. One half (54.4 percent) of the employees in large plants had the service of part-time physicians, as contrasted with practically none (0.3 percent) in small plants. This situation indicates a great need for more regularly scheduled medical services in all plants, but particularly in the small plants where the part-time physician may be utilized to good advantage.

¹⁰ Many investigators classify plants as "small" up to 250 or even 500 employees. The figure 100 was chosen here to make the statistics in this survey comparable with those of previous surveys.

TABLE 100. PERCENTAGE OF EMPLOYEES RECEIVING SERVICES OF PLANT HEALTH AND MEDICAL PERSONNEL
(By Size of Plants)

| NUMBER OF EMPLOYEES | PHYSICIANS | | | REGISTERED NURSES | | | NONREGISTERED NURSES | | | DENTISTS | | |
|--|------------|-----------|---------|-------------------|-----------|---------|----------------------|-----------|---------|-----------|-----------|---------|
| | Full-time | Part-time | On-call | Full-time | Part-time | On-call | Full-time | Part-time | On-call | Full-time | Part-time | On-call |
| 1-5 | ... | ... | 17.6 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 6-20 | ... | ... | 30.9 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 21-50 | ... | 0.3 | 29.8 | ... | ... | 2.5 | ... | ... | ... | ... | ... | ... |
| 51-100 | ... | 0.3 | 36.5 | 0.4 | 0.4 | 1.4 | 0.3 | ... | ... | ... | ... | 0.8 |
| Subtotal 1-100 | ... | 0.3 | 34.2 | 0.3 | 0.3 | 1.6 | 0.2 | ... | 0.2 | ... | ... | 0.5 |
| 101-250 | ... | 5.1 | 48.5 | 10.2 | 1.0 | 2.9 | 4.8 | 1.1 | 0.8 | ... | 0.7 | 1.6 |
| 251-500 | 0.5 | 9.2 | 59.5 | 39.0 | 2.9 | 6.0 | 13.0 | 0.6 | 0.8 | ... | 1.4 | 2.1 |
| 501-1,000 | 1.0 | 21.2 | 70.7 | 62.2 | 5.9 | 9.9 | 12.0 | 5.7 | 1.1 | ... | ... | 2.7 |
| 1,001-2,500 | 13.7 | 39.1 | 62.3 | 91.9 | 1.1 | 4.7 | 20.4 | 2.0 | 2.3 | ... | ... | 5.7 |
| 2,501 & more | 59.3 | 86.0 | 25.9 | 95.5 | 4.8 | 3.5 | 7.0 | ... | ... | 3.1 | 10.5 | ... |
| Subtotal 101 & more | 32.7 | 54.4 | 43.2 | 76.8 | 3.8 | 4.7 | 10.2 | 1.2 | 0.7 | 1.6 | 5.5 | 1.7 |
| All industries | 30.9 | 51.6 | 42.8 | 72.7 | 3.6 | 4.5 | 9.7 | 1.2 | 0.7 | 1.5 | 5.3 | 1.6 |
| OTHER HEALTH PERSONNEL | | | | | | | | | | | | |
| INDUSTRIAL HYGIENISTS | | | | | | | | | | | | |
| 1-5 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 6-20 | ... | ... | ... | ... | 0.5 | ... | 0.8 | 1.4 | 1.1 | 5.3 | 7.0 | 1.5 |
| 21-50 | ... | ... | ... | 1.1 | ... | 0.4 | 2.9 | 2.7 | 2.1 | 6.7 | 7.0 | 6.9 |
| 51-100 | ... | 0.3 | ... | ... | 0.8 | ... | 6.6 | 7.9 | 2.4 | 15.2 | 11.7 | 9.7 |
| Subtotal 1-100 | ... | 0.2 | ... | 0.3 | 0.6 | 0.1 | 5.2 | 6.0 | 2.2 | 12.2 | 10.1 | 8.5 |
| 101-250 | ... | 0.3 | 1.1 | 2.3 | ... | 0.5 | 11.1 | 12.8 | 7.2 | 21.9 | 18.4 | 16.5 |
| 251-500 | 0.6 | ... | 3.5 | 1.4 | 0.6 | 1.5 | 27.1 | 15.8 | 11.8 | 29.1 | 14.8 | 18.6 |
| 501-1,000 | ... | 2.2 | 2.6 | 5.0 | 2.8 | 1.7 | 29.4 | 22.3 | 10.1 | 21.8 | 12.9 | 26.9 |
| 1,001-2,500 | 1.5 | 3.6 | 4.3 | 8.9 | 4.1 | 2.0 | 72.2 | 8.1 | 2.2 | 11.0 | 9.1 | 21.6 |
| 2,501 & over | 5.2 | 3.4 | ... | 62.1 | 3.7 | ... | 64.0 | 6.7 | ... | 3.3 | 4.5 | 22.0 |
| Subtotal 101 & more | 3.0 | 2.7 | 1.5 | 34.0 | 3.0 | 0.7 | 52.2 | 10.4 | 3.5 | 11.2 | 8.7 | 30.4 |
| All industries | 2.8 | 2.5 | 1.4 | 32.3 | 2.9 | 0.7 | 49.7 | 10.2 | 3.4 | 11.3 | 8.8 | 21.0 |
| SAFETY-ENGINEERS | | | | | | | | | | | | |
| TRAINED FIRST-AID WORKERS ³ | | | | | | | | | | | | |
| 1-5 | ... | ... | ... | ... | ... | ... | ... | ... | 1.5 | 5.3 | ... | 5.3 |
| 6-20 | ... | ... | ... | ... | 0.5 | ... | 0.8 | 1.4 | 1.1 | 4.8 | 7.0 | 1.5 |
| 21-50 | ... | ... | ... | 1.1 | ... | ... | 2.9 | 2.7 | 2.1 | 6.7 | 7.0 | 6.9 |
| 51-100 | ... | 0.3 | ... | ... | 0.8 | ... | 6.6 | 7.9 | 2.4 | 15.2 | 11.7 | 9.7 |
| Subtotal 1-100 | ... | 0.2 | ... | 0.3 | 0.6 | 0.1 | 5.2 | 6.0 | 2.2 | 12.2 | 10.1 | 8.5 |
| 101-250 | ... | 0.3 | 1.1 | 2.3 | ... | 0.5 | 11.1 | 12.8 | 7.2 | 21.9 | 18.4 | 16.5 |
| 251-500 | 0.6 | ... | 3.5 | 1.4 | 0.6 | 1.5 | 27.1 | 15.8 | 11.8 | 29.1 | 14.8 | 18.6 |
| 501-1,000 | ... | 2.2 | 2.6 | 5.0 | 2.8 | 1.7 | 29.4 | 22.3 | 10.1 | 21.8 | 12.9 | 26.9 |
| 1,001-2,500 | 1.5 | 3.6 | 4.3 | 8.9 | 4.1 | 2.0 | 72.2 | 8.1 | 2.2 | 11.0 | 9.1 | 21.6 |
| 2,501 & over | 5.2 | 3.4 | ... | 62.1 | 3.7 | ... | 64.0 | 6.7 | ... | 3.3 | 4.5 | 22.0 |
| Subtotal 101 & more | 3.0 | 2.7 | 1.5 | 34.0 | 3.0 | 0.7 | 52.2 | 10.4 | 3.5 | 11.2 | 8.7 | 30.4 |
| All industries | 2.8 | 2.5 | 1.4 | 32.3 | 2.9 | 0.7 | 49.7 | 10.2 | 3.4 | 11.3 | 8.8 | 21.0 |

Full-time nursing services were available to 76.8 percent of the employees in large plants as contrasted with practically none (0.3 percent) in small plants. Small plants use practically no part-time nurses (0.3 percent) and present a promising field for stimulating and organizing a pool of nursing services.

The use, in some instances, of unregistered nurses hardly changes the over-all nursing situation, since their full-time services were available only to 10.2 percent of the employees in large plants and 0.2 percent of those in small plants. Part-time services of unregistered nurses were reported also for 1.2 percent of the employees in large plants.

The services of dentists were provided to 1.6 percent of the employees in large plants on a full-time basis and to 5.5 percent on a part-time basis. Small plants provided no dental services.

Industrial hygiene engineers or industrial hygienists were reported as available in large plants on a full-time basis to 3.0 percent of the employees and on a part-time basis to 2.7 percent. Small plants provided practically nothing. Even in the large plants these figures for industrial hygienists are somewhat exaggerated, as very few plants employed engineers with training in industrial hygiene adequate for this purpose. The very large industrial concerns increasingly tend to employ industrial hygiene engineering personnel, but for the medium-size and small plants this method is impracticable normally. Control of occupational health hazards requires assistance from outside sources throughout the great majority of industrial establishments and, it is expected, will continue to do so.

The services of those classified as "other health personnel" were provided on a full-time basis in large plants to 34 percent of the employees and on a part-time basis to 3 percent. In small plants, however, the corresponding ratios for full-time and part-time personnel, respectively, were 0.3 percent and 0.6 percent. Persons usually counted in this category were clinical and X-ray technicians, attendants, record clerks, and sometimes other clerical personnel in the medical department.

The services of "safety directors," or "safety engineers," not well-defined terms, were available on a full-time basis to 52.2 percent of employees in large plants and to 5.2 percent of those in small plants, while on a part-time basis these services were available to 10.4 percent of employees in large plants and 6 percent of workers in small plants. Not allowing for a small number of duplications among the

full-time and part-time safety personnel reported for large plants, the services of safety engineers were available to slightly more than 60 percent of employees in large plants and about 11 percent of employees in small plants.

The reporting plants showed that 11.3 percent of employees had the services of full-time trained first-aid workers, 11.2 percent in the large plants, and 12.2 percent in the small plants. Part-time or on-call first-aid workers were available when needed to 39.1 percent of the employees in large plants and to 18.6 percent of those in small plants. Allowing for less than a 1-percent duplication of these services, about 50 percent of the employees in large plants had the services of first-aid workers, while in small plants 30 percent had such services.

There is wide divergence between the different industries in the percentage of employees for whom the services of professional and related personnel are available. The effect of these differences is, of course, reflected in the plant health services offered. Industries in which more than 20 percent of the employees had the services of full-time physicians were: transportation (90.9 percent), personal services (63.9 percent), iron and steel (31.2 percent), trade (30.2 percent), and the nonferrous metal industries (22.8 percent). Plants in seven industries did not employ full-time physicians, and two in this group (extraction of minerals and lumber and furniture) reported no part-time physicians. The services of part-time physicians were available to large percentages of employees in the following industries: public utilities (100 percent); trade (80.4 percent); personal service (65.7 percent); iron and steel (55.5 percent); transportation (44.6 percent); and leather, paper and printing, textiles, and food and allied (from 38.5 percent to 30.3 percent).

All the employees in the public utilities and 90.9 percent of those in transportation were served by full-time nurses. More than half were covered in the following industries: trade (82.3 percent), iron and steel (77.3 percent), miscellaneous manufacturing (68 percent), nonferrous metals (65.3 percent), paper and printing (56.9 percent), food and allied (53.6 percent), and leather (52.9 percent). Service by part-time nurses was reported by only 7 of the 16 industries included in the survey, and the percentage of employees covered was very small—the largest, 13.6 percent, for persons engaged in transportation.

The services of full-time safety engineers were reported by plants

in every type of industry except extraction of minerals; more than half the employees were covered in transportation (68.9 percent), iron and steel (64.9 percent), and the nonferrous metal industries (54.9 percent). The services of part-time safety engineers were available to 90.2 percent of the persons employed in the extraction of minerals and to varying percentages (from 44.4 percent in personal service to 9 percent in the leather industry).

PLANT MEDICAL FACILITIES It was impracticable to obtain by questionnaire any quantitative or qualitative description of plant medical facilities and equipment. The medical services rendered by the plants may be considered the best index of these facilities. Inquiry was made, however, about the provision of first-aid kits, dispensary or first-aid rooms, plant hospital beds, and beds contracted for in public hospitals.

First-aid kits.—In the large plants, first-aid kits were available to 59.7 percent of the employees and in the small plants, 90.1 percent. The use of first-aid kits in large plants is one-third less than in the 1939 Illinois Survey, a situation which suggests that more dependence wisely is placed upon medical and nursing services.¹¹

First-aid and dispensary rooms.—Facilities of this type were available to about 80 percent of the employees in the large plants, but to only 15 percent of those in the small plants. In each class of plants, however, a definite increase is shown over this provision in the 1939 survey.

Plant hospital beds.—Information on this subject in the questionnaire was intended to relate to the capacity of the plant hospitals operated by industrial establishments. The question was answered, however, not only by the few large plants with hospitals but also by many plants which merely provided beds or cots in the plant dispensary or possibly in a rest room. Beds of various types (not well defined) were available to 57.5 percent of the employees in the large plants, but to only 6.1 percent of those in the small plants.

Contract hospital beds.—In some sections of the country, large industrial plants have contracts with nearby hospitals for beds to accommodate injured employees. Remarkably few plants in the Chicago-Cook County area had such a provision, possibly because of the large number of local hospitals. Hospital beds under contract were

¹¹ Illinois Department of Public Health, *Evaluation of the Industrial Hygiene Problem of Illinois*, Springfield, Ill., 1939.

available to only 19,334 (3.4 percent) of the employees of large plants and to none of the small-plant employees.

PLANT HEALTH AND MEDICAL SERVICES FOR EMPLOYEES The large, progressive industries generally have found it an excellent policy in industrial relations and in the interest of efficient production to provide a wide and balanced spread of industrial medical services and health supervision to keep employees fit and on the job. One of the chief functions of official industrial hygiene agencies today is promoting the organization of adequate medical services within industrial establishments with at least regularly scheduled part-time services of physicians and nurses. It was pointed out earlier that a large proportion of the reporting plants in the Chicago-Cook County area, including the great majority of small ones, were in no position to provide health services, since 90 percent of them had no regularly scheduled services of physicians, and about three-fourths had no regular nursing services. The day has long passed when the provision of treatment for plant injuries and illnesses can be considered an adequate or even a minimal health program.

Since the majority of workers are in the larger industries,¹² where some medical services are often provided, the proportion of workers receiving these services is much greater than the proportion of plants providing them. Also, not infrequently plants with no medical or nursing personnel arrange with an outside agent such as an insurance carrier, industrial clinic, health department, tuberculosis association, or nursing association to perform special services for them, either at the plant or elsewhere.

Table 101 shows the percentage of workers in plants having more than and less than 100 employees, and in all plants regardless of industry, who are provided with the 21 health and medical services listed in the questionnaire. The percentage of workers receiving services at the plant may be added to the percentage receiving services elsewhere, as no duplication exists within these classifications. For example, if a plant reported that its injured workers were treated "at the plant" and "elsewhere," the in-plant service was the only one considered in coding the schedules.

The following sections describe the extent to which each of these

¹² According to *Manufacturers, 1939*, 51 percent of wage earners in Illinois worked in manufacturing plants with more than 250 employees. Only 34 percent, however, worked in plants with more than 500 employees.

TABLE 101. PERCENTAGE OF WORKERS TO WHOM PLANT MEDICAL AND HEALTH SERVICES ARE AVAILABLE AT THE PLANT OR ELSEWHERE

| SERVICES | PERCENTAGE OF WORKERS RECEIVING SERVICES | | | |
|--|---|------------------|------------------------|------------------|
| | MORE THAN 100 WORKERS | | 100 WORKERS OR LESS | |
| | <i>At Plant</i> | <i>Elsewhere</i> | <i>At Plant</i> | <i>Elsewhere</i> |
| 1. Pre-employment physical examinations | 58.1 | 24.8 | 0.5 | 23.0 |
| 2. Periodic physical examinations | 46.9 | 10.9 | 2.0 | 6.0 |
| 3. Examination after an illness | 57.9 | 12.4 | 0.0 | 10.2 |
| 4. Chest X-ray examinations | 37.0 | 15.8 | 0.4 | 10.1 |
| 5. Tuberculosis surveys | 25.2 | 8.2 | 0.4 | 5.8 |
| 6. Blood tests for syphilis | 37.2 | 24.1 | 1.3 | 11.2 |
| 7. Dental examinations and advice | 14.7 | 4.2 | 0.3 | 1.3 |
| 8. Dental X-ray examinations | 13.1 | 5.2 | 0.0 | 1.5 |
| 9. Special eye examinations | 31.5 | 13.6 | 0.9 | 4.6 |
| 10. Medical advice after examinations | 61.2 | 7.9 | 0.7 | 6.5 |
| 11. Placement of handicapped workers | 74.9 | 0.9 | 10.2 | 1.3 |
| 12. Treatment of plant injuries | 81.7 | 17.1 | 3.6 | 80.6 |
| 13. Treatment of minor on-the-job illnesses | 80.6 | 6.6 | 7.3 | 31.8 |
| 14. General medical care of employees | 16.4 | 3.8 | 0.3 | 12.8 |
| 15. Medical care of employees' families | 2.0 | 1.5 | 0.3 | 3.6 |
| 16. A continuing health education program | 47.1 | 0.3 | 1.3 | 1.5 |
| 17. Visiting nurse for sick absentees | 44.9 | 3.4 | 0.1 | 2.7 |
| 18. Plant health inspections by industrial physician | 46.2 | 1.7 | 2.7 | 1.2 |
| 19. Accident records | 95.3 | 1.4 | 61.7 | 12.7 |
| 20. Illness records | 79.6 | 0.6 | 18.4 | 3.3 |
| 21. Plant cafeteria or commissary service | 67.7 | 0.2 | 6.1 | 0.6 |

twenty-one health and medical services is provided to industrial workers in the Chicago-Cook County area.

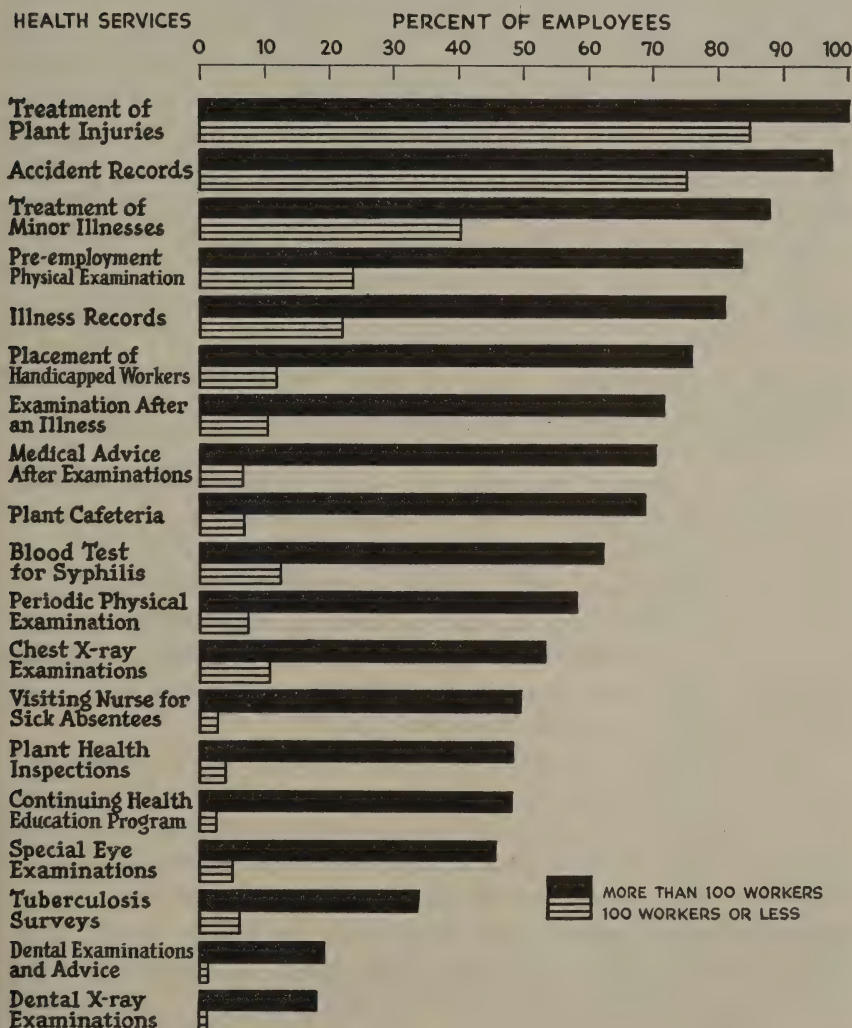
Pre-employment physical examination.—For all plants, 79.7 percent of the applicants for employment were reported to be receiving physical examinations, 55 percent at the plant, and 24.7 percent elsewhere. Most of these examinations were performed in the larger plants (more than 100 employees) which reported that 82.9 percent (58.1 + 24.8) of their employees were examined. In the smaller plants (100 employees or less), on the other hand, only 23.5 percent of the applicants received examinations, 0.5 percent at the plant, and 23 percent at physicians' offices or industrial clinics. *Manufacturers*, 1939, reports that 29 percent of the wage earners in Illinois were employed in plants with 100 or fewer employees, and 49 percent were in plants with less than 250 workers. The lack of these and other health services in the smaller plants is, therefore, an important factor in judging the adequacy of the industrial health and medical services in the survey area.

Observations made in visits to a number of plants and small indus-

FIGURE XIII

PLANT HEALTH and MEDICAL SERVICES PROVIDED for EMPLOYEES

By size of plant



trial clinics indicated that this important procedure for the proper and safe placement of workers according to their physical capabilities varied considerably in quality, as well as in quantity. Thorough examination for proper placement appeared to be the exception rather than the rule. Only a few of the large plants provided an adequate physical examination. Many of the small plants referred their employees to small industrial clinics for examination and paid a very small fee for this service. In general, physicians appeared to limit their examinations to the items on special examination forms which, frequently, were decidedly sketchy. While a few employers furnished rather complete forms and received adequate reports, all too often the examinations made and the reports returned resembled wartime mass production practices. A physical examination designed to meet a low cost is often no better than none, for it may be misleading.¹³

The classification of services by industry indicates the wide variation in the universality of physical examinations, ranging from 100 percent in public utilities and transportation down to 4 percent in clothing manufacturing. Iron and steel, the largest industry, and nonferrous metals provided pre-employment physical examinations to about 85 percent of their applicants for work.

Periodic physical examinations.—Yearly examinations were seldom made on all employees as a method of protecting the workers' health by detecting diseases in early, curable, or controllable stages. Often they were made only on employees with a known exposure to occupational health hazards, such as silica or lead. Sometimes these examinations were limited to special diagnostic procedures. At other times they were made as precautionary measures on employees over a certain age, for example, forty-five years.

Plants of all sizes reporting periodic examinations employed 55.1 percent of the reported personnel. In the larger plants, 57.8 percent of the employees were subjected to periodic examinations, whereas in the small plants only 8 percent were said to be examined at regular intervals. What proportion of the employees within these groups actually received periodic examinations is not known, but it is believed to be considerably smaller than stated. Industries reporting the largest proportion of workers receiving periodic examinations were public utilities (100 percent), transportation (72 percent), textiles (67 percent), nonferrous metals (64 percent), iron and steel (63 percent), and chemicals (61 percent). Few or none were performed on

¹³ United States Public Health Service, *Manual of Industrial Hygiene*.

employees in leather, lumber and furniture, clothing manufacturing, and extraction of metals.

Examination after an illness.—This procedure is important as a method of determining whether a sick employee has convalesced sufficiently to work without danger to himself or to others, and also as a means of keeping communicable diseases in the plant at a minimum. As a matter of practicability, many plants do not require the worker to clear through the medical department if the duration of the illness does not exceed three days, thereby excluding many cases of minor illness. Some plants require the absent employee to tell the nurse the reason for absence. She then decides whether an examination is necessary.

Examinations after an illness were required of 67.1 percent of the employees in the reporting plants, provided at the plant to 54.9 percent, and elsewhere to 12.2 percent. In the large plants 57.9 percent of previously ill workers were examined at the plant, and 12.4 percent elsewhere. In the small plants only 10.2 percent were so examined, all outside the plant.

The extent to which employees in the various industrial groups were given post-illness examinations varied considerably, as the following tabulation indicates.

| <i>Type of Industry</i> | <i>Percentage of Employees Examined</i> |
|-----------------------------|---|
| Public utilities | 100.0 |
| Transportation | 95.2 |
| Textiles | 80.8 |
| Iron and steel | 70.4 |
| Nonferrous metals | 67.2 |
| Personal services and trade | 66.2 |
| Chemicals | 51.3 |
| Clothing | 20.4 |
| Leather | 17.6 |
| Lumber and furniture | 11.3 |
| Minerals | 00.0 |

Obviously, some plants required a private physician's certificate, since several plants without medical services reported post-illness examinations.

X-ray examinations of the chest.—An X-ray examination of the chest is essential in making a diagnosis of tuberculosis of the lungs in its early, more easily curable stages and in detecting other obscure

diseases of the lungs and the heart. The importance of pre-employment and periodic X-ray examinations has been generally recognized for the control of tuberculosis and of silicosis in dusty trades. In recent years mass X-ray surveys have uncovered cases of tuberculosis among one to two percent of apparently well industrial workers.

In Chicago, the Municipal Tuberculosis Sanitarium and the Tuberculosis Institute of Chicago and Cook County have made a sizable number of X-ray surveys in industry with the use of mobile units; and the Tuberculosis Institute has surveyed a large number of workers elsewhere in Cook County (see Chapter 26). The Division of Industrial Hygiene of the Illinois Department of Public Health has worked closely with its Division of Tuberculosis Control in making chest X-rays available to employees at no cost to either the plant management or the worker. All these facilities should be expanded so that all industrial workers will be safeguarded by X-ray examinations of the lungs.

Some of the larger plants maintain equipment for making X-ray examinations. Others may send employees and applicants for work to near-by industrial clinics for these examinations. Certainly, no physical examination may be considered complete without an X-ray examination of the chest.

In all reporting industries, 50.6 percent of the workers were reported to have received X-ray examinations, 35.1 percent at the plant, and 15.5 percent elsewhere. Most of these examinations were made by the larger plants, which reported that 52.8 percent of their employees had had X-ray examinations, while the small plants reported such examinations for only 10.5 percent of their employees. All these percentages must be considered somewhat exaggerated, because it is known that several plants reporting X-ray examinations for their employees provided them only for limited numbers working at dusty operations. The proportion of employees having X-ray examinations is considerably smaller than the proportion receiving physical examinations (50.6 vs. 79.7 percent).

The use of X-ray examinations varied greatly among the industries, ranging from 100 percent in the public utilities and extraction of minerals, to none in the clothing and personal-service industries. The large iron and steel group reported that 65.4 percent of its employees were receiving X-ray examinations.

Tuberculosis surveys.—The answers to this question necessarily duplicate in part the preceding question on X-ray examinations of

the chest, since plants customarily X-raying all employees probably assumed this practice equivalent to a tuberculosis survey. Many plants without routine X-ray services during the past few years were known, however, to have received this service from the several agencies with mobile X-ray units.

Thirty-two percent of the employees in all the plants had participated in case-finding surveys for tuberculosis, 23.9 percent in surveys provided by the plants and 8.1 percent in surveys provided elsewhere. The great majority of these surveys were in large plants, where 33.4 percent of the employees participated. In small plants, on the other hand, only 6.2 percent of the employees participated.

The textile industry headed the list of industries providing tuberculosis surveys (56.3 percent); the iron and steel, trade, chemical, and nonferrous groups were next (45.5, 35.6, 30, and 30 percent, respectively). None of the plants in the clothing and personal-service groups reported employee participation in case-finding surveys.

In discussing the value of mass tuberculosis surveys, both management and labor groups emphasized their belief that it is a mistake for an industry to carry on tuberculosis case-finding unless it is prepared to follow through with the proper handling of the active cases uncovered. Follow-up diagnostic facilities must be provided to determine whether the suspect really does have tuberculosis and is in actual need of treatment.¹⁴ Proper sanatorium care must be available for needy cases; and assistance must be provided the families of wage earners hospitalized for prolonged periods of time. Close co-operation is required between all interested groups to accomplish these objectives. (See Chapter 26.)

Blood tests for syphilis.—Serodiagnostic tests for syphilis are an essential part of any complete physical examination, as are X-ray examinations of the chest and urinalyses. Results of these and other tests should always be kept confidential by the physician. Persons with syphilis should be allowed to continue their employment, providing they undergo proper treatment, have no disqualifying complications, and are in noninfectious stages of the disease. All positive reactions should be carefully rechecked to preclude the treatment of persons with false-positive reactions. In the few plants in which employees are exposed to chemicals likely to injure the liver or the bone marrow, persons who have syphilis or are under treatment for this dis-

¹⁴ H. E. Hilleboe. "What Is Early Tuberculosis?" *Public Health Reports*, LXI (September 6, 1946), 1,295.

ease should not be permitted to work, because of the danger of unfavorable reactions.

The prejudice that prevails in some industrial establishments against the employment of those who give evidence of syphilitic infection needs to be reconsidered in the light of present advances in the treatment of this disease. Only a brief period of treatment is necessary today to render early syphilis noninfectious and hence no source of danger to fellow workers. As regards the worker himself, there is little danger of subsequent invalidism provided the very simple course of modern treatment is carried out. The arbitrary exclusion of this type of worker is therefore founded on nothing more than outmoded superstition. In the interest of fairness, industrialists are urged to adopt a sane and realistic attitude toward syphilitic and ex-syphilitic workers.

Blood tests for syphilis were made on 58.7 percent of the workers in all reporting industries, but this figure was influenced by the large plants which performed this test on 61.3 percent of employees as compared with 12.5 percent in small plants. The blood tests were performed usually as part of the pre-employment examination, although a considerable number had been made in recent years in connection with the Chicago Venereal Disease Control Program (see Chapter 27). Since 79.7 percent of the employees in reporting plants received physical examinations, while only 58.7 percent received blood tests, it is evident that blood tests were not an integral part of the pre-employment examination.

The practice of making blood tests varied greatly from one industry to another. The public utilities led, with 100 percent, transportation was next, with 80.2 percent, textiles had 71.3 percent, nonferrous metals had 70.4 percent, iron and steel had 59.4 percent, while at the bottom of the scale were leather, with 12.5 percent, personal service, with 2.6 percent, and clothing, with none.

Dental examinations and advice.—While a few leading industrial plants have offered in-plant dental services for the past twenty or twenty-five years, the great majority of plants and employees are not as yet provided with these services. The importance of preventing and controlling dental infection and of giving emergency treatment has been generally recognized, and industries are now becoming more cognizant of the desirability of providing at least preventive dental services.

More than 80 percent of the employees in the 1,399 reporting

plants were not receiving dental examinations. Receipt of dental examinations and advice was reported for only 18.1 percent of the employees; 14 percent at the plants, and 4.1 percent elsewhere. These figures are known to be higher than the true figure, because certain persons completing the questionnaires replied in the affirmative if the examining physicians had inspected the mouth.

A great many of the reported dental examinations were made in the larger plants, covering 18.9 percent of their workers. In the small plants, only 1.6 percent of the employees received dental examinations.

The practice of making dental examinations varied greatly between industries, as the following tabulation indicates.

| <i>Type of Industry</i> | <i>Percentage</i> | <i>Type of Industry</i> | <i>Percentage</i> |
|-------------------------|-------------------|-------------------------|-------------------|
| Textiles | 53.6 | Food | 19.4 |
| Nonferrous metals | 38.2 | Iron and steel | 17.7 |
| Transportation | 31.5 | Clay, glass, and stone | 3.2 |
| Trade | 30.5 | Lumber and furniture | 1.0 |
| Paper | 22.8 | | |

No dental examinations were reported for workers employed in extraction of minerals, personal services, and public utilities.

Dental X-ray examinations.—These examinations are of considerable value in the program of preventive medicine, because they uncover hidden foci of infection that may cause serious damage to health and well-being. The importance of this procedure has been recognized by a very few plants and by the Division of Industrial Hygiene of the Illinois Department of Public Health, which operates a mobile dental unit for this purpose. Dental X-ray examinations were made recently for more than 600 of 1,700 dental examinations of workers.

Dental X-ray services were given to workers in about the same proportion as dental examinations and advice: 17.4 percent of all employees, 18.3 percent in the larger, and 1.5 percent in the smaller plants. The extent to which this service was provided in the different industrial groups varied about as did the provision of dental examinations, with the following exception: three large public utilities which did not provide dental examinations reported dental X-ray examinations for 74.7 percent of their employees.

Special eye examinations.—Space in the questionnaire was insufficient to permit a definition of this type of examination. As a

result, affirmative replies were not limited, as they should have been, to examinations in which there was accurate testing of the employee's vision to determine his ability to see efficiently with reference to his work, together with recommendations for, or provision of, corrective lenses when desirable. Instead, many firms answered "yes" to this question when the examination consisted only of casual eye inspections or cursory tests of vision made during routine physical examinations. In spite of this broad interpretation of the question, the replies indicate that well over half the employees in large plants and almost 95 percent of those in small plants receive no eye examinations of any type.

The returns for all plants indicated that 43 percent of the employees received special eye examinations, 29.9 percent at the plant and 13.1 percent elsewhere. In the larger plants, the total percentage of employees so examined was 45.1; 35.1 at the plant, and 13.6 elsewhere. In the smaller plants the total percent was 5.5; 0.9 at the plant, and 4.6 elsewhere.

As with other examinations, the proportion of employees examined in each industrial group varied greatly, ranging from 75.4 in transportation, 59 percent in trade, and 57 percent in textiles and iron and steel, down to few or none in clay, glass and stone, clothing, personal services, public utilities, and extraction of minerals.

Medical advice after examinations.—Determination of the proper placement of employees according to their physical capabilities and of safeguarding them against serious effects of hazardous environmental conditions in the workroom are not the only advantages of industrial physical examinations, which also serve to prevent disabling illness. Many general or special physical examinations uncover defects or diseases, often in early stages, that can be cured or corrected, provided the examinee is given proper advice as to what action to take and is able to carry out the recommendations made. Unfortunately, accurate information as to the extent to which examinees were informed of their conditions and given proper advice could not be obtained in every case by the persons completing the questionnaires, especially when the various medical examinations were made outside the plant. It is hoped that consideration of survey questions such as this may serve to stimulate industrialists to further thought along these lines. This result is known to have occurred in a fair number of instances.

Giving of medical advice after examinations was indicated for

65.8 percent of the employees of all the reporting plants: 58 percent at the plants, and 7.8 percent elsewhere. In the large plants medical advice was given to 69.1 percent of employees: 61.2 percent at the plant, and 7.9 percent elsewhere. In the small plants, on the other hand, the percentage of employees receiving medical advice was 7.2; 0.7 at the plant and 6.5 elsewhere. As in the case of many other categories of health services, employees of small plants received little or no health supervision of this type.

Placement of handicapped workers.—Great interest was aroused during the second World War in utilizing the abilities of workers with physical handicaps, instead of emphasizing their impairments by rejecting them at employment offices. Hundreds of thousands of these workers were employed in war industries, and when placed in suitable work frequently were found to be more conscientious and less likely to have accidents than their able-bodied co-workers. The U. S. Civil Service Commission, the U. S. Office of Education, the U. S. Department of Labor, and the U. S. Public Health Service, among other agencies, have pioneered in the intelligent and efficient employment of physically impaired workers. An abundance of information is available to show the industrial soundness of this practice. After the war, with the easing of the labor situation, many feared that handicapped persons, including veterans, would find it increasingly difficult to obtain suitable work. Within the limits of this survey, the indications are that this fear has not materialized. Three fourths of the larger industrial plants appear to have a policy of employing handicapped workers. While some plants visited, to be sure, did not employ many workers in this category, a general willingness to do so when suitable work was available seemed to exist. Plants employing 72.5 percent of all the workers specified that it was their policy to employ handicapped workers. The variation between plants with more than one hundred employees and plants with one hundred employees or less was considerable (75.8 vs. 11.5 percent). The variation between industrial groups was also very great, ranging from 100 percent in public utilities, 91.7 percent in transportation, 84.9 percent in trade, 75.5 percent in iron and steel, 71.2 percent in textiles, 60 percent in chemicals and miscellaneous manufacturing down to about 30 percent in lumber, furniture, leather, and clothing.

Treatment of plant injuries.—The Illinois Workmen's Compensation Act states that all employers electing coverage under this

act shall provide an injured employee with the necessary first-aid medical and surgical services and all necessary medical, surgical, and hospital services reasonably required to cure or to relieve the injury. The Workmen's Occupational Disease Act makes similar provisions for the treatment of occupational diseases.¹⁵ Plant provisions for the treatment of injuries or diseases resulting from the occupation were the beginning of modern industrial medicine and were responsible for the early growth of the industrial hygiene field in public health. Despite the modern advances in this field, far too many industrial establishments offer little in the way of health services except the treatment of industrial injuries.

Treatment for plant injuries, in fact, was indicated for many more workers (97.9 percent for large and small plants combined) in the reporting plants than any of the other health and medical services specified in the questionnaire. Treatment of injuries was reported for 98.8 percent of the workers in the large plants, 81.7 percent at the plant, and 17.1 percent elsewhere. While the small plants reported similar provisions for 84.2 percent of the workers, only 3.6 percent could obtain treatment at the plant. It was provided elsewhere for 80.6 percent. Apparently, 100 percent coverage on this service was lacking mainly because employees were so seldom injured in a number of plants that no formal arrangement for their treatment appeared necessary.

Treatment of minor on-the-job illnesses.—Provision of first-aid medical treatment for minor ailments of employees while on the job is a natural by-product of treatment of plant injuries. While few industries provide general medical care for employees, it is common practice for the industrial nurse or physician to treat such common conditions as headache, colds, menstrual cramps, and heartburn so that the employee may finish the day's work in relative comfort. For more serious conditions, the employee is generally instructed to see a private physician. Many plants reported treatments of this kind, although they had no trained professional personnel to administer them. Such services, however, were not considered "medical treatment" and were not tabulated.

Medical treatment of minor illnesses was reported by plants having 84.7 percent of all the employees, 87.2 percent of those in the large plants, and 39.1 percent in the small plants. This type of service was less available and less valuable for 6.6 percent of the large-plant

¹⁵ See p. 676.

employees and 31.8 percent of those in the small plants because it was provided outside the plant.

Variation between industries providing this service ranged from 100 percent of the employees in public utilities down to about 65 percent of those in lumber and furniture and clothing. The large iron and steel industries provided treatment for 91.6 percent of their employees.

General medical care of employees and their families.—A number of large industries throughout the country have developed medical care for employees and, in some instances, for their families. These programs have been described in detail in industrial medical journals and in the *Journal of the American Medical Association*.

As far as could be determined, however, no plants in the Chicago-Cook County area provided this type of service, with the exception of a large railway system. Repeated checks of the plants having reported in the affirmative on these two questions indicated that the reply referred either to plant treatment of minor illnesses or to the medical provisions of group health and hospital insurance, described elsewhere in this chapter.

A continuing health education program.—It is recognized that no public health program for the prevention of illness can be effective without the intelligent and active participation of those most affected. This statement applies especially to industry, where even medical supervision over employees can exist for only eight hours a day, while the benefits of training on health and hygiene problems and practices could extend throughout the 24-hour day. Despite the large proportion of the large plants reporting to the survey that they have training programs, personal visits to many plants indicated that most of the educational activities reported were extremely limited and hardly worthy of the name. Even in several of the largest plants, having otherwise efficient medical services, health education was lacking, because no one was primarily interested or trained in this field and there were no employee health committees to further such activities. Official health agencies and medical departments will find this field a promising one for promoting the conservation of health and the prevention of disease.

Some provision for health education was reported for 45.1 percent of all employees, and in almost all cases it was available on the plant premises. The marked contrast between the extent to which large and small plants provided this type of service is indicated by

the percentages of employees covered: 47.4 in the large plants, but only 2.8 in the small ones.

The extent to which employees received these services also varied greatly in the different industries, ranging from 82.2 percent of all the employees in public utilities, 72.6 percent in textiles, 48.9 percent in iron and steel and 46.9 percent in chemicals down to none in personal services and extraction of minerals.

Visiting nurse services for sick absentees.—The services of a nurse to visit the homes of ill employees, to make certain they are receiving sufficient medical care, and to assist in other ways are valuable in minimizing the effects of sickness. Such nurses should never be used for policing purposes or as truant officers. Several of the largest plants provided their own staff of visiting nurses, whereas medium or small plants sometimes depended on the services provided by group insurance carriers or by visiting nurse associations.

Visiting nursing services were available to 45.8 percent of the employees of all plants reporting to the survey, 42.5 percent through plant nurses, and 3.3 percent through outside agencies. Large-plant employees were the ones most frequently covered (48.3 percent)—44.9 percent through nurses employed by the plant and 3.4 percent by arrangement with outside agencies. This service was available to only 2.8 percent of the small-plant employees, furnished almost entirely by outside agencies.

There was considerable variation among the various industries with regard to the provision of this service. The percentage of employees to whom visiting nurses were available ranged from 100 in public utilities, 72.6 in textiles, 70.3 in trades, and about 45 in iron and steel and nonferrous metals down to few or none in personal services, clothing, clay, glass, and stone, and the extraction of minerals.

Plant inspections by the industrial physician.—One of the criteria showing whether a plant has a modern and comprehensive medical service is the physician's knowledge of the plant, its operations, and the relationship between the workers and their jobs. This statement holds true whether the physician is full-time, part-time, or visits the plant at more or less regular intervals. Many industrial physicians in industry consider it essential to tour the plant regularly, observe the employees at work, inspect plant sanitary facilities, and confer with plant officials upon possible health problems. The latter function, as well as many others, is greatly facilitated in plants where the physician is responsible to plant management.

Of the large plants, those employing 47.9 percent of the workers had the benefit of inspections by industrial physicians. Only a few of the small plants, those employing 3.9 percent of the workers, reported such inspections. Industries in which half or more of the employees were in plants reporting this type of service were as follows: public utilities (82.2 percent), iron and steel (58.1 percent), and nonferrous metals (51 percent). Few or no provisions for health inspections by physicians were reported by the plants in the following industrial groups: lumber and furniture, leather, clothing, personal services, and extraction of minerals.

Accident records.—Maintenance of records of accidental injuries, which are essential for medicolegal purposes and for accident prevention, was reported by the large plants, employing 96.7 percent of the employees, and by small plants with 74.4 percent of the employees. Records were maintained at the plants in practically all the large industries, but were kept elsewhere for 12.7 percent of the employees in small plants. Any industrial establishment providing physicians' or nurses' services should maintain a complete file of accident records.

Sickness records.—Individual records for employees, covering all examinations and illnesses, are highly desirable. They are necessary for proper medical supervision of employees' health and are very useful in studying ways to minimize sickness absenteeism in individuals or groups subject to excessive illness. Several leading industries in the country have found complete illness records invaluable in maintaining the health of employees at a high level.

In the large plants, 80.2 percent of employees were reported to be in plants maintaining sickness records, as compared with 21.7 percent who were in small plants. The fact that the great majority of these records were not being utilized to minimize illness is indicated later in this chapter.

The coverage on illness records varied from 100 percent of the employees in public utilities down to 34.8 percent of those in clothing manufacture. The iron and steel industries maintained illness records for 79.6 percent of their employees.

Cafeteria or commissary service.—Throughout the recent war, emphasis was placed on increasing the efficiency of industrial workers and decreasing illness by proper nutrition. An effective nutrition program in industry means making available well-balanced meals for the large number of workers who must eat their mid-shift meal at the plant and emphasizing the nutritional aspects of health

education. Observations made during plant visits and the limited amount of general health education reported by industrial plants in the survey area indicate that very few nutritional health education services are available to industrial employees.

Information on the questionnaire about provision of meals in the plants was limited to the cafeteria or commissary service furnished employees, either at the plant or elsewhere. While this type of service was available to 67.9 percent of the employees in large plants, it was reported for only 6.7 percent of the small-plant employees. Location within the plant was reported for practically all cafeteria and commissary facilities.

The percentage of employees provided food services ranged from 92.5 in public utilities, 80.9 in trade, and 76.2 in the large iron and steel industry, down to 17.4 in lumber and furniture, 15.3 in clay, glass, and stone, and none in the extraction of minerals.

PLANT WELFARE PROVISIONS The 1,399 reporting plants indicated the percentage of employees protected by group life insurance, group health insurance, group hospital plans, and group medical care plans. These provisions are particularly important for wage earners in industry, since without them there is usually no income for workers and their families in the event of a nonoccupational illness or injury.

Table 102 shows the proportion of workers in large and small plants who are protected by these benefits. No information was obtained about the many types of plans and the extent of employer and employee participation. When the data indicated that "some" of the workers were so protected, but did not specify the percentage, the number and percentage of workers in those plants were tabulated as "unspecified."

Group life insurance.—Group life insurance of various kinds was provided for 57 percent of the employees in the large plants and for 36.5 percent of those in the small plants (see Table 101). An unknown proportion of an additional 11.1 percent of the employees of large plants and 5.0 percent of the employees of small plants also had this type of protection. Only 31.9 percent of the employees in large plants and 58.5 percent of those in small plants were stated to have no provision for group life insurance.

Table 102 also shows that as the plants increased in size, group life insurance was available to an increasing percentage of employees, from 16.8 percent in the smallest plants to 68.1 percent in those with

TABLE 102. PERCENTAGE DISTRIBUTION OF EMPLOYEES HAVING SPECIFIED WELFARE BENEFITS
(By Size of Plant)

| SIZE OF PLANTS | NUMBER OF PLANTS | NUMBER OF EMPLOYEES | GROUP LIFE INSURANCE | | | GROUP HEALTH INSURANCE | | | GROUP HOSPITAL PLAN | | |
|---------------------|------------------------|---------------------------|----------------------|------|--------------------------|------------------------|------|--------------------------|---------------------|------|--------------------------|
| | | | None | Yes | Unspecified ^a | None | Yes | Unspecified ^a | None | Yes | Unspecified ^a |
| 1-5 | 37 | 131 | 81.7 | 16.8 | 1.5 | 88.5 | 9.9 | 1.5 | 78.6 | 16.8 | 4.6 |
| 6-20 | 132 | 1,704 | 74.8 | 21.3 | 3.9 | 91.7 | 7.9 | 0.5 | 72.3 | 23.4 | 4.3 |
| 21-50 | 244 | 8,837 | 62.7 | 29.5 | 7.8 | 76.6 | 19.0 | 4.4 | 51.1 | 39.2 | 9.6 |
| 51-100 | 285 | 20,758 | 55.2 | 40.8 | 4.0 | 73.4 | 24.7 | 1.9 | 44.0 | 49.1 | 6.8 |
| Subtotal 1-100 | 698 | 31,430 | 58.5 | 36.5 | 5.0 | 75.4 | 22.1 | 2.5 | 47.7 | 44.8 | 7.5 |
| 101-250 | 347 | 56,519 | 40.0 | 50.2 | 9.7 | 60.3 | 31.5 | 8.2 | 35.1 | 52.0 | 12.8 |
| 251-500 | 148 | 52,546 | 25.3 | 67.0 | 7.7 | 45.2 | 48.3 | 6.5 | 26.1 | 62.7 | 11.2 |
| 501-1,000 | 107 | 72,293 | 26.4 | 63.4 | 10.2 | 46.1 | 43.0 | 10.9 | 23.9 | 63.2 | 12.9 |
| 1,001-2,500 | 63 | 95,481 | 19.3 | 68.1 | 12.6 | 38.4 | 48.8 | 12.8 | 20.6 | 66.6 | 12.8 |
| 2,501 & more | 36 | 286,186 | 37.1 | 51.2 | 11.7 | 29.4 | 58.9 | 11.7 | 30.8 | 55.8 | 13.4 |
| Subtotal 101 & more | 701 | 563,025 | 31.9 | 57.0 | 11.1 | 37.5 | 51.4 | 10.9 | 28.1 | 58.9 | 13.0 |
| All industries | 1,399 | 594,455 | 33.3 | 55.9 | 10.8 | 39.6 | 49.9 | 10.5 | 29.2 | 58.1 | 12.7 |

^a Exact percentage of employees covered not reported by plants.

1,001–2,500 employees. The percentage of employees, however, in the very largest plants (those with more than 2,500 employees) was lower (51.5 percent).

Group health insurance.—Group health or sickness insurance was provided for 51.4 percent of the employees in the large plants and 22.1 percent of those in the small plants. The percentage ranged from about 8 percent in the smallest plants (1 to 20 employees) to 59 percent in plants with more than 2,500 employees. An additional 10.5 percent of all employees were in plants which reported that this type of benefit was provided, but did not specify the number of persons covered.

Group hospital plans.—Some type of group hospitalization or insurance was provided for 58.9 percent of the employees in large plants and 44.8 percent of those in small plants. The percentage of employees for whom this benefit was provided ranged from 16.8 in the smallest plants (1–5 employees) to 66.6 percent in the 1,001–2,500 employee groups. In addition to the 58.1 percent of all employees covered by such plans, 12.7 percent of the employees were in plants which reported this benefit, but did not indicate the number of employees who received it.

In numerous instances the completed questionnaire indicated that surgical benefits were included also, but this information had not been requested and therefore was not tabulated.

Group medical care.—Plans for prepaid medical care for employees, and in some instances for their families, have been developed in a number of large industries throughout the United States. A number of the state medical societies sponsor plans of this type,¹⁶ which have been described in some detail in the *Journal* of the American Medical Association, *Industrial Medicine*, and state medical society bulletins.

As far as could be determined, however, a large railway system which operates a hospital in Chicago is the only industry in the Chicago-Cook County area which offers any prepayment plan for the medical care of employees, except for the cash indemnity provisions included in some commercial insurance policies. Repeated checks of numerous plants which had reported the existence of plans indicated that their affirmative replies related either to medical and surgical

¹⁶ "Variations in Current Industrial Medical Service Plans—Panel Discussion," *Journal of the American Medical Association*, CXXXVI (November 11, 1944), 708; W. P. Dearing, "Medical Plans across the Country," *American Journal of Public Health*, XXXVI (July, 1946), 769.

benefits provided in connection with group hospitalization or to commercial insurance protection. While benefits of these two types were indicated for about 17 percent of the employees, most of the medical and surgical coverage in group hospitalization plans was reported correctly under the questionnaire section on group hospital plans, hence the number included in the 17 percent is by no means complete.

The Chicago and the Illinois medical societies are currently formulating acceptable plans for prepaid medical care. The widespread extension of such plans to industrial workers in Chicago and Cook County should do a great deal toward equalizing the distribution of medical care among the industrial population and minimizing the effects of illness.

In summary, group life insurance was reported for at least 56 percent of the employees, group health insurance for 50 percent, and group hospital plans for 58 percent. These figures are favorably influenced, of course, by the number of large plants in the sample and possibly by whatever selection was inherent in the plants which did or did not complete questionnaires.

Nevertheless, the present trend toward more complete protection against illness is shown by the fact that about 850,000 persons in the Chicago-Cook County area subscribe to the nonprofit Blue Cross Plan for Hospital Care, and about 830,000 to commercial health and accident plans providing various degrees of hospital protection.

The Hospital Service Plan Commission of the American Hospital Association estimates that 17 percent of the population of the United States is protected by nonprofit Blue Cross hospital plans. At the end of 1945, 5,921,360 persons were carrying group accident and health insurance, providing average weekly indemnities of \$17.30 for each insured person. A survey made by the Life Insurance Association of America indicates that commercial group hospital expense insurance was in force for 4,371,350 employees and 3,432,320 members of their families and that group life insurance amounting to \$22,426,725,000 covered 11,329,388 persons.

The present survey, however, shows that much still needs to be done toward providing more industrial workers with insurance protection. Industrial hygiene agencies should seek the co-operation of management and labor groups in furthering this type of protection to workers.

COMPARISON WITH PREVIOUS SURVEYS Table 103 shows the

TABLE 103. INDUSTRIAL HEALTH SERVICE PROVISIONS

| KIND OF SERVICE | CHICAGO-COOK CO. SURVEY | | | FIFTEEN-STATES SURVEY ^b | | | ILLINOIS SURVEY (1939) ^d | | |
|--------------------------------------|--|-------------|--|--|-------------------|--|--|-------------------|--|
| | PERCENTAGE OF EMPLOYEES RECEIVING SPECIFIED SERVICE IN PLANTS HAVING | | | PERCENTAGE OF EMPLOYEES RECEIVING SPECIFIED SERVICE IN PLANTS HAVING | | | PERCENTAGE OF EMPLOYEES RECEIVING SPECIFIED SERVICE IN PLANTS HAVING | | |
| | More Than 100 | 100 or Less | | More Than 100 | 100 or Less | | More Than 100 | 100 or Less | |
| Plant health and medical personnel | | | | | | | | | |
| Physicians, full-time | 32.7 | 0 | | 20.3 | 0.4 | | 12.8 | 0.4 | |
| Physicians, part-time | 54.4 | 0.3 | | 27.6 | 5.6 | | 25.4 | 4.1 | |
| Registered nurses, full-time | 76.8 | 0.3 | | 43.7 | 0.6 | | 43.1 | 0.5 | |
| Registered nurses, part-time | 3.8 | 0.3 | | 1.9 | 0.5 | | 1.9 | 0.6 | |
| Nonregistered nurses, full-time | 10.2 | 0.2 | | | | | | | |
| Nonregistered nurses, part-time | 1.2 | 0 | | | | | | | |
| Dentists, full-time | 1.6 | 0 | | | | | | | |
| Dentists, part-time | 5.5 | 0 | | | | | | | |
| Industrial hygienists, full-time | 3.0 | 0 | | | | | | | |
| Industrial hygienists, part-time | 2.7 | 0.2 | | | | | | | |
| Other health personnel, full-time | 34.1 | 0.3 | | | | | | | |
| Other health personnel, part-time | 3.0 | 0.6 | | | | | | | |
| Safety engineers, full-time | 52.2 | 5.2 | | 33.0 | 2.2 | | 27.5 | 4.2 | |
| Safety engineers, part-time | 10.4 | 6.0 | | 29.1 | 11.9 | | 37.0 | 10.8 | |
| Trained first-aid workers, full-time | 11.3 | 12.2 | | 57.1 | 17.3 ^c | | 39.6 | 15.2 ^e | |
| Trained first-aid workers, part-time | 39.1 | 18.6 | | | | | | | |

KIND OF SERVICE

Plant medical facilities

| | | | | | | |
|--|---------|--------|-----------|---------|---------|--------|
| First aid kits | 59.7 | 90.1 | 91.3 | 91.1 | 93.1 | 97.6 |
| First aid dispensary rooms | 80.2 | 15.3 | 65.0 | 6.9 | 70.0 | 7.5 |
| Plant hospital beds | 57.5 | 6.1 | | | | |
| Contract hospital beds | 3.4 | 0 | | | | |
| Plant welfare provisions | | | | | | |
| Group life insurance (specified) | 57.0 | 36.5 | | | | |
| Group life insurance (unspecified) ^a | 11.1 | 5.0 | | | | |
| Group health insurance (specified) | 51.4 | 22.1 | 50.6 | 13.4 | 51.7 | 14.1 |
| Group health insurance (unspecified) ^a | 10.9 | 2.5 | | | | |
| Group hospital plan (specified) | 58.9 | 44.8 | | | | |
| Group hospital plan (unspecified) ^a | 13.0 | 7.5 | | | | |
| Group medical care plan (specified) | 17.2 | 16.9 | | | | |
| Group medical care plan (unspecified) ^a | 3.8 | 2.0 | | | | |
| Total number of employees | 563,025 | 31,430 | 1,128,553 | 358,671 | 228,114 | 75,137 |

^a Unspecified includes employees in the plants reporting that their employees were covered but giving no percentage.

^b "A Preliminary Survey of the Industrial Hygiene Problem in the United States," U. S. Public Health Service, *Bulletin No. 259*, p. 38.

^c No distinction is made between full time and part time.

^d Illinois Department of Public Health, *Evaluation of the Industrial Hygiene Problem of Illinois*, Springfield, Ill., 1939, p. 26.

number and percentage of workers receiving specified industrial health service provisions in reporting plants with more than 100 employees and with 100 employees or less (large and small plants).¹⁷ Comparable percentage data are shown, wherever available, from the fifteen-state survey made in 1936-39 largely under the guidance of the United States Public Health Service, and from the 1939 survey of Illinois which was a part of the fifteen-state survey. These data for the present survey are shown graphically on page 645.

In the small plants, very few health provisions were made for employees. In all three surveys the comparable percentages were of the same magnitude in most instances. The main differences between small plants in the present survey and those in the fifteen-state survey were: provision of fewer part-time physicians (0.3 vs. 5.6 percent), more first-aid or dispensary rooms (15.3 vs. 6.9 percent), more services from trained first-aid workers (30.8 vs. 17.3 percent), and more health insurance or sickness benefits (22.1 vs. 13.4 percent). Inasmuch as comparable figures for the Illinois part of the fifteen-state survey corresponded very closely to those for the whole survey, these differences may well indicate small-plant trends during the past seven years.

In the large plants, the progress indicated is more encouraging. More than twice as many workers now have the services of full- and part-time physicians as were reported in the 1939 Illinois survey, and almost twice as many as those reported in the fifteen-state survey. Almost twice as many (77 percent vs. 43 percent) have the services of a full-time registered nurse. The ratio of employees having the service of part-time registered nurses also has doubled (3.8 vs. 1.9 percent). The availability of the services of safety engineers or directors, full- and part-time, remains about the same as in the preceding surveys (63 percent), while the availability of the services of trained first-aid workers (50 percent) is greater than in the 1939 Illinois survey (40 percent), but less than in the fifteen-state survey (57 percent).

The percentage of workers in large plants provided with first-aid kits (60) is substantially lower than that reported in the 1939 Illinois survey (93) and the fifteen-state survey (91), thereby showing the trend toward professional supervision of medical needs. The large

¹⁷ United States Public Health Service, *Preliminary Survey of the Industrial Hygiene Problem in the United States*, Bulletin No. 259, p. 38; Illinois Department of Public Health, *Evaluation of the Industrial Hygiene Problem of Illinois*.

plants now also provide 80 percent of the employees with first-aid rooms or dispensary rooms as compared with the 70 percent reported in the Illinois survey and the 65 percent in the fifteen-state survey. Health insurance or sickness benefits were available to half the workers in large plants in all three surveys, slightly more than that if the plants with an unknown percentage of workers covered are considered.

The health services not comparable with those included in the preceding surveys were discussed earlier in this chapter. Even in the large plants, many workers are not provided with services considered essential by many of the reporting plants. The employees in the small plants are at an extreme disadvantage in almost every category of services. A great deal must be done to stimulate and organize adequate health services in plants of all sizes.

The percentage of Chicago-Cook County plants with full-time physicians and nursing services may be compared also with the percentages reported in a 1943 survey of 3,086 plants in Pennsylvania and a 1945 survey of 1,237 plants in New Jersey.¹⁸ These two surveys were made under wartime conditions, which may have affected the ratio of physicians and nurses either favorably or unfavorably, depending on the balance between the shortage of professional personnel and the increased plant needs and the funds available for such services.

Table 104 shows the percentage of plants by size groupings, with the full- or part-time services of physicians and nurses reported by the three surveys. Comparisons can be made only between groups of similar size, as the different surveys have an unequal distribution of small and large plants. In comparing physicians' services in New Jersey and in Pennsylvania, the percentages of plants offering these services are very nearly the same except in the small plants, for which New Jersey shows a decidedly lower percentage. The Chicago-Cook County Health Survey sample shows considerably smaller percentages of plants with physicians' services, however, than the other two surveys, except in the group of largest plants. For this group, both New Jersey and Chicago-Cook County report that 66 percent of the plants have physicians' services. All except the largest industries (more than 1,000 employees) in the Chicago-Cook County area are

¹⁸ J. Shilen. "Industrial Medical Facilities in Pennsylvania." *Industrial Medicine*, XII (June, 1943), 379; W. G. Hazard. "Health Facilities in New Jersey Plants," *Industrial Medicine*, XV (January, 1946), 15.

TABLE 104. COMPARISON OF CHICAGO-COOK COUNTY (1946), NEW JERSEY (1945), AND PENNSYLVANIA (1943) PERCENTAGES OF PLANTS WITH FULL-TIME OR PART-TIME PHYSICIAN AND NURSE SERVICE^a (BY SIZE OF PLANT)

| SIZE OF PLANT | PLANTS WITH FULL- OR PART-TIME MEDICAL PERSONNEL PERCENTAGE OF PLANTS | | |
|----------------------------|--|-------------------------------------|-----------------------------------|
| | <i>Chicago- Cook Co.</i> | <i>Pennsylvania 1943 Survey</i> | <i>New Jersey 1945 Survey</i> |
| <i>Physicians employed</i> | | | |
| 1-100 | 0.3 | 1.8 | 0.5 |
| 101-250 | 4.3 | 5.3 | 5.2 |
| 251-500 | 9.5 | 15.0 | 16.9 |
| 501-1,000 | 21.5 | 32.9 | 35.6 |
| 1,001 & more | 65.7 | 71.6 | 65.8 |
| All groups | 0.9 | .. ^b | .. ^b |
| <i>Nurses employed</i> | | | |
| 1-100 | 0.29 | 1.1 | 1.0 |
| 101-250 | 9.22 | 6.6 | 13.3 |
| 251-500 | 39.19 | 21.2 | 52.3 |
| 501-1,000 | 62.62 | 46.8 | 81.3 |
| 1,001 & more | 91.92 | 87.7 | 91.2 |
| All groups | 1.8 | .. ^b | .. ^b |

^a W. G. Hazard, "Health Facilities in New Jersey Plants," *Industrial Medicine*, XV (January, 1946), p. 21.

^b Not comparable because of uneven distribution of plants by size.

deficient in providing the regular services of physicians, as compared to industries in New Jersey in 1945 and Pennsylvania in 1943.

Comparison of the provision of the full- or part-time nursing services reported in the present survey with those reported by the 1945 New Jersey and the 1943 Pennsylvania surveys indicate that the small plants in the local industries were very deficient. Only about one third as many reported this service. In the next three groups of larger plants, the present survey sample occupies an intermediate position, being well below the New Jersey industries, but well above those in Pennsylvania. In the largest plants, those having more than 1,000 employees, 92 percent of the local plants provide nursing services, the same proportion as in New Jersey, whereas the figure for Pennsylvania (88 percent) is very similar. Here, again, promotion of nursing services is needed most in the smaller plants.

Only 538, or 38.5 percent, of the Chicago-Cook County plants reported dispensaries of various sizes or first-aid rooms, as compared with 65 percent of the New Jersey plants. In the smaller plants, however, the ratio in this survey (10.5 percent) is one fourth that for New Jersey (39.4 percent). As the plants increase in size, the percentage of those with dispensaries becomes very close: 93 percent was

reported for plants with more than 1,000 employees in both surveys.

RESULTS OF PLANT VISITS In June, 1946, industrial hygiene engineers from the Illinois Department of Public Health's Division of Industrial Hygiene visited 143 representative industrial plants in two manufacturing districts, one within Chicago and one elsewhere in Cook County. These visits were made to determine any likely source of errors in the completion of the questionnaires received by mail and to gather supplemental information on absenteeism, occupational diseases, and health education. Two industrial physicians also visited 24 of the largest plants with full-time medical services to obtain similar data and to further general information on the nature of industrial medical services and facilities in these plants. These 167 personal visits resulted in the completion of 11.9 percent of the 1,399 questionnaires tabulated during the survey.

Visits to representative plants.—The 143 representative plants visited in the two manufacturing districts employed 37,698 workers. The plants were classified by industry as 29 chemical, 4 clay, stone, and glass, 19 food, 46 iron and steel, 5 nonferrous metals, 7 lumber and furniture, 17 paper and printing, 8 miscellaneous manufacturing, 1 personal service, and 7 trade. No very large plants were included, and few very small plants were visited. Their average size (264 employees) is less than the average of 425 employees for all plants in the survey.

Analysis of the 143 survey forms completed during visits to representative plants (and also those visits to plant medical departments) indicated that the questionnaire data supplied by mail were reasonably accurate with certain minor exceptions. These inaccuracies were due largely to a lack of knowledge of industrial health and hygiene services among plant personnel completing the forms and to the lack of space on the questionnaires for the definition of technical terms. In fact, several plant officials interviewed during these visits were not familiar with all phases of plant operations—a not uncommon finding in larger plants.

The possible sources of error relating to services previously described were: (a) number of hospital beds (this figure often included dispensary beds for temporary patients, and sometimes cots in rest rooms); (b) number of industrial hygienists (the few persons reported in this category included several with no specialized technical training); (c) check-list of plant operations (this list was sometimes incomplete because of insufficient knowledge of plant operations); (d)

periodic physical and X-ray chest examinations (data on employees receiving this service may be overrated, because several plants gave these examinations to selected groups of employees only; (e) industrial hygiene surveys (despite a short definition stating that "for evaluating possible health hazards such as harmful dusts, fumes, vapors, and gases" surveys had included visual inspections made by the safety inspector, the fire prevention inspector, and other persons with no technical training in industrial hygiene). Plant officials sometimes were confused as to whether surveys had been made by the state health or labor department and put down the same date for surveys from both agencies, a very unlikely coincidence. For these reasons, data on past industrial hygiene surveys were tabulated only on plants which received personal visits.

Most of the inaccuracies on these few questions tend to present a brighter picture of plant health and hygiene services than really exists. Therefore, the stated lack of certain health facilities and services in plants reporting to the Chicago-Cook County Health Survey may be considered to be a minimal account of these deficiencies.

In addition to the information obtained on the questionnaire during these visits, certain supplemental facts were recorded. Of the 143 representative plants visited, only 10 plants (7 percent) kept records on sickness absenteeism. The seven plants from which figures were available reported sickness absenteeism rates ranging from 0.7 to 4 percent and averaging 2.1 percent for the first half of 1946. One of these plants reported a range of 2.1 to 3.5 percent a month. Thirty-two plants (22 percent) provided data on absenteeism from all causes, ranging from 1 to 15 percent, with average and median rates of 5 percent for the past six months. No data suitable for detailed statistical analysis were available at these plants on the causes of either sickness absenteeism or total absenteeism.

Relatively few cases of occupational diseases in these 143 plants during the first six months of 1946 were recorded. Eleven cases of occupational disease causing loss of time were reported. These, occurring at four plants, consisted of 8 cases of dermatitis, 1 case of eye and nose irritation, 1 "cold," and 1 case of undetermined nature. Seven plants reported 56 other cases of occupational diseases which caused no disability during the six-month period.

Only five plants (3.5 percent) reported having a workers' health committee, although twenty-two others spoke of having a safety committee, when asked this question. The activities of these few health

committees were extremely limited and did not appear to be effective.

It was apparent that in most of the plants no fact-finding survey of health hazards had been made in recent years by any agency. Of the 143 plants visited, 80 plants had had no survey in the past 2½ years. Of the 104 industrial hygiene surveys by various agencies which the remaining plants reported, 54 percent were made in 1946, 21 percent in 1945, 6 percent in 1944, and 19 percent at an unknown date.

This deficiency of periodic industrial hygiene surveys in these plants by either official or private agencies directly reflects the present shortage of personnel in the agencies available for making these surveys. Obviously, to make annual or biennial surveys in the many industrial establishments in Chicago and Cook County with potential health hazards would require more personnel than can be provided under the present conditions by the service agencies described in Chapter 32.

Visits to twenty-four plants with full-time medical departments.
—Survey physicians visited twenty-four large industrial establishments supposedly employing full-time industrial physicians to study their medical facilities, program, and services and to obtain additional data on absenteeism, health education, and occupational diseases. Three of these plants were found to employ only half-time physicians; 21 had full-time physicians. The questionnaire returns indicated that only 29 plants in Chicago and Cook County employed full-time physicians. Only 1 other is known to exist. Hence the personal visits covered about two thirds of the plants known to have full-time industrial physicians on their staffs.

These 24 industrial establishments employed 185,000 persons, averaging 7,700 each, and their size ranged from 1,200 to more than 32,000 employees. They employed 38 full-time, 77 part-time, and 38 on-call physicians, 173 full-time registered nurses and 2 nonregistered nurses, 1 full-time and 6 part-time dentists and one on call, 6 industrial hygienists, 88 safety engineers, and several hundred employees trained in first aid.

More important is the number of these plants without trained health personnel. One had no nurse, 18 had no dentist's services, and 3 had no safety engineer. Seven plants had no first-aid kit, while in several others many kits were scattered throughout the plant. Although 20 of the plants visited had no industrial hygienist, the occupational health problems in many of this group were insufficient

to justify the employment of such personnel in their own organizations.

All 24 plants had dispensaries, with a total of 345 rooms and an average of 14.4. The number of rooms varied from 2 to 55. Five plants had neither dispensary nor hospital beds, while the remainder (18 reporting) had a total of 86, or an average of 4.8 beds. One plant reported a contract for 60 beds in a community hospital.

A total of 235 industrial operations involving possible health hazards were reported by these 24 plants, an average of 9.8 per plant, with a range from 20 to none.

Since these plants provided the most complete medical personnel and facilities of any surveyed, they would be expected to offer a wide variety of medical services to employees. Many of them did, others did not, as the number of plants appearing in the "No Services" column in Table 105 indicates.

TABLE 105. TYPES OF MEDICAL SERVICES BY NUMBER OF PLANTS PROVIDING THEM

| TYPES OF SERVICES AVAILABLE | PLANTS PROVIDING | |
|---|--------------------------|--------------------|
| | <i>Services at Plant</i> | <i>No Services</i> |
| Pre-employment physical examinations | 22 ^a | 1 |
| Periodic physical examinations | 18 | 6 |
| Examination after an illness | 21 | 3 |
| Chest X-ray examinations | 12 | 12 |
| Tuberculosis surveys | 7 ^a | 16 |
| Blood tests for syphilis | 13 ^a | 10 |
| Dental examinations and advice | 7 | 17 |
| Dental X-ray examinations | 2 | 22 |
| Special eye examinations | 9 | 15 |
| Medical advice after examinations | 23 | 1 |
| Placement of handicapped workers | 20 | 4 |
| Treatment of plant injuries | 23 ^a | 0 |
| Treatment of minor on-the-job illnesses | 24 | 0 |
| General medical care of employees | 0 | 24 |
| Medical care of employees' families | 0 | 24 |
| A continuing health education program | 10 | 14 |
| Visiting nurse for sick absentees | 10 | 14 |
| Plant health inspections by industrial physicians | 15 | 9 |
| Accident records | 24 | 0 |
| Illness records | 23 | 1 |
| Plant cafeteria or commissary service | 19 | 5 |

^a One other plant provided this service elsewhere.

Only three services were available at all the plants: treatment of plant injuries and of minor on-the-job ailments and the keeping of accident records. All except one plant offered pre-employment physical examinations and medical advice after examinations. Periodic

examinations were given to at least some of the employees by 18 of the 24 plants, and some type of examination or check-up after an illness, by 21. Illness records were kept in all but 1 plant. The tabulation reveals the extent to which many of the plants failed to offer health and medical services, many of which are considered essential in an effective industrial health program.

Insurance provisions were the rule in these plants. Only 5 had no group life insurance, 4, no health insurance or sickness benefits, and 3, no hospital expense plan. In the 19 plants providing group life insurance, 7 covered all employees, 8 covered an average of 79 percent of the total number employed, while 4 failed to specify the percentage covered. In the 20 plants which provided group health insurance, 10 covered all employees, 7, an average of 91 percent, and 3, an unspecified percentage. Of the 21 plants with hospital expense plans, 4 covered all employees, 13, an average of 69 percent, and 4, an unspecified percentage. None of the 24 plants had plans or provisions for general medical care of employees.

Although these plants were among the leaders in providing medical services, health education in many of them was limited. Only 10 plants reported any systematic educational activities on health for employees. Only 1 had a workers' committee on health, and its activities were said to be very limited. While this type of education is in its infancy, it is a promising one for further work.

Only 1 plant reported any mental hygiene activities. This large industry had psychologists and related personnel for testing and screening applicants for work and for studying maladjusted employees. Unfortunately, their activities were not co-ordinated very closely with those of the medical department.

The impression obtained from the personal visits made to these 24 large plants indicates that several with more or less adequate medical personnel and facilities do not offer a sufficiently wide and well-balanced spread of activities for the protection and promotion of their employees' health, according to modern standards. There is also a regrettable lack of utilization by several plants of the health promotional and fact-finding services offered by industrial hygiene agencies.

A total of 34 industrial hygiene surveys was reported by these plants. Only 15, several said to be limited, had been made during the last year and one half (1945 and the first half of 1946). No surveys had been made in 4 plants during the past eight years. Four surveys

were made in 1941 or earlier. In eleven cases the date of the survey was not known. The following tabulation indicates the type of agency making the survey and the number made by each type.

| <i>Agency Making Survey</i> | <i>Number</i> |
|-----------------------------|---------------|
| Plant personnel | 12 |
| Insurance carrier | 3 |
| Private consultant | 3 |
| State health department | 5 |
| State labor department | 9 |
| Other agencies | 2 |

Obviously, the goal of one plant-wide survey of health hazards every year or two was far from realized in these large plants which were otherwise leaders in medical and health provisions for employers. This situation demonstrates the inadequacy of present available industrial hygiene services to meet the need of all industrial plants and the lack of interest on the part of some plants in utilizing the services of these agencies. Recommendations are made in Chapter 33 for strengthening the industrial hygiene agencies and for stimulating interest in their services.

Although 23 of these 24 plants kept some form of illness records, only 6 had made any statistical analysis of the data on these records in order to study the causes of sickness absenteeism and to determine ways of reducing it. The 24 plants reported only 8 cases of disablement from occupational diseases and 31 cases which were nondisabling during the first half of 1946. The chief causes were cutting oils and other dermatitis-producing agents. There were also a few infections among employees of meat packing firms and a few cases of lead poisoning. One concern reported occasional cases of early silicosis. One large industry with an unusual exposure to lead compounds had done a remarkably good job in recent years in controlling this hazard by both medical and engineering methods of control.

Among the few larger industrial plants which kept complete records of sickness absenteeism, one, with about 3,400 employees, had full records, readily available for analysis. A special study was made of these records for the four quarterly periods beginning July 1, 1945, and ending June 30, 1946, and the following statistical data were obtained: (1) the types of nonindustrial illness and injury (both industrial and nonindustrial) which caused sickness absenteeism, (2)

the number and percentage of days lost, and (3) the dollar cost to the employees because of wages lost.

Upper respiratory infections headed the list as causes of disability and accounted for 10, 39, 34, and 20 percent of all days lost during the four quarterly periods studied. A great increase occurred during the fall and winter months. The cost because of lost wages for this type of illness was about \$71,000. Studies by the U. S. Public Health Service have shown repeatedly that this class of disease is the leading cause of illness. It offers a promising field for preventive medicine.

Gastro-intestinal disorders were next in importance, causing 18, 13, 13, and 19 percent of the total sickness absenteeism during the quarters studied and costing the employees more than \$36,000 because of wages lost. Diseases of the heart and blood vessels caused 11, 5, 7, and 13 percent of the days lost during the four quarters and cost the employees more than \$20,000 in wages lost. Diseases classified as "general medical conditions" caused 12, 8, 9, and 9 percent of the sickness absenteeism during the four periods and cost more than \$21,000 in lost wages. Industrial and nonindustrial injuries, chiefly among men, were also leading causes of disability, accounting for 8, 8, 9, and 11 percent of the days lost during these periods and costing more than \$22,000 in lost wages. These injuries included only three minor cases of occupational diseases, which are not a problem in this industry. Uninvestigated illnesses, real or alleged, for which the cause was not recorded, were responsible for substantial amounts of absenteeism and wage loss: 21, 11, 9, and 8 percent of the total days lost through the four quarterly periods and \$33,000 in lost wages.

Disablement from sickness and injuries of all types resulted in 5,816, 7,393, 8,408 and 5,412 days of time lost during these four quarterly periods and a total wage loss of \$249,200.

The total time lost represents an annual average of 8.1 days per person and quarterly averages of 1.9, 2.3, 2.4, and 1.5 days. The annual wage loss as a result of sickness and injuries averaged \$73.56 per person.

Women constituted about 18 percent of the employees in this company, and accounted for about this percentage (16.1 to 19.9) of the days lost because of illness or injuries. Since, however, most of the industrial injuries occurred among the men, the actual percentage

of illness among women would be somewhat higher. In a previous study of sickness absenteeism among workers in a public utility, the U. S. Public Health Service reported that males annually lost 8.2 days per person because of sickness and injuries and females 11.9 days.¹⁹

Despite the lack of comprehensive survey data, it is evident that in the Chicago-Cook County area, as elsewhere in the United States, sickness absenteeism is a serious production and economic problem to industry. The industrial plants in the area which have industrial medical services should give much more attention to preventing illness and minimizing its effects. The other industrial plants should make every effort to obtain at least part-time medical supervision of their employees' health.

Although the present survey has produced no suitable data for showing the actual value of industrial medical services in reducing sickness, several earlier investigations have shown that the benefits derived from these services were very considerable.²⁰ The report of the National Association of Manufacturers mentioned earlier in this chapter states that the companies operating well-organized health programs reported a 20 percent reduction in absenteeism.

PLANT OPERATIONS AND POSSIBLE EXPOSURES TO CERTAIN HEALTH HAZARDS

Because of limited time and the limitations of the questionnaire method, no effort was made to obtain information as to the numbers of workers who might have had possible harmful exposures to the many chemicals, dusts, gases, and other health hazards incident to industrial processes.

The 1939 survey of 3,358 Illinois plants employing 303,251 workers, made by the Division of Industrial Hygiene of the Illinois Department of Public Health did include extensive data on the various kinds of work-room exposures that might cause occupational diseases, and the numbers of workers so exposed. Approximately 53 percent of the surveyed plants and 57 percent of the workers surveyed were in the Chicago-Cook County area. Reference should be made to the report of this study for detailed information on the subject of exposures by occupation. Of the 303,251 plant workers covered in the study, 184,181, or 60.7 percent, were exposed to specified indus-

¹⁹ United States Public Health Service, *Manual of Industrial Hygiene*.

²⁰ C. O. Sappington, *Essentials of Industrial Health*, Philadelphia, Lippincott Co., 1943.

trial materials and by-products, and each exposed worker had an average of 2.1 exposures. It was estimated that the total number of exposed workers in all the industries from which the sample was taken would be about 697,000.

Table 10 in the Illinois report ²¹ lists the types of material to which more than 10 percent of the employees in the various industrial plants are exposed and the percentage of employees exposed to each type. Eighty-two percent of the persons engaged in the extraction of minerals were exposed to bituminous coal dust, 65 percent to carbon monoxide, 65 percent to other gases, and small percentages to other hazardous materials. Exposures to organic dust were also reported for 46 percent of textile employees, 44 percent of lumber and furniture workers, 39 percent of cigar and tobacco workers, 25 percent of the clothing workers, and smaller percentages of persons engaged in several other industries.

Silicates were the materials to which the largest percentage of clay, stone, and glass workers were exposed (33 percent); these materials were also a hazard to smaller percentages of workers in several other industrial groups. The largest percentages of persons exposed to materials producing dermatitis were the cigar and tobacco workers (33 percent) and workers in the food and allied industries (28 percent). While a number of other hazardous materials were listed, the percentage of workers exposed in any one industry was never more than 22 percent and for most materials was considerably smaller.

In the present survey (1946), the only information gathered on exposures likely to cause occupational diseases was a checklist of thirty-two common industrial operations that may offer a hazard to the health of workers. It cannot be inferred from these data whether or not such hazards do exist or how many workers were exposed, since only fact-finding studies by trained personnel can answer these questions. The data will serve, however, as a rough index of the need for such studies in the Chicago-Cook County area and will show where the needs are greatest.

All but 92 of the 1,399 reporting plants completed the checklist of possibly hazardous operations. As would be expected, the larger the plant, the greater the number of specified operations. The following tabulation of the average number of potentially hazardous operations per plant, in plants of specified size, shows a rapid rise

²¹ Illinois Department of Public Health, *Evaluation of the Industrial Hygiene Problem of Illinois*.

from less than 1 in the smallest plants to 7.63 in plants with more than 2,500 employees.

| <i>Size of Plant (Number of Employees)</i> | <i>Number of Plants</i> | <i>Average Number per Plant</i> |
|--|-----------------------------|-------------------------------------|
| All sizes | 1,307 ^a | 2.29 |
| 1-5 | 36 | 0.92 |
| 6-20 | 122 | 0.82 |
| 21-50 | 220 | 1.05 |
| 51-100 | 268 | 1.60 |
| 101-250 | 329 | 2.24 |
| 251-500 | 140 | 3.23 |
| 501-1,000 | 99 | 3.94 |
| 1,001-2,500 | 61 | 6.29 |
| 2,501 and more | 32 | 7.63 |

^a Ninety-two plants did not report on this item.

A marked variation between industries in the average number of possibly hazardous operations also was apparent. The average number was 0.13 in clothing and 0.18 in trades, about 4.0 in the large iron and steel and nonferrous-metals groups, 5.42 in transportation, and 9.1 in two large public utilities.

Even though the manufacturing and mechanical industries account for 85 percent of the occupational diseases in Illinois, the data presented in this and the following section indicate that other industries should not be overlooked by industrial hygiene agencies and that the management of all kinds of plants should make certain that hazardous operations in their plants are recognized and controlled adequately.

THE OCCUPATIONAL-DISEASE PROBLEM

Until October, 1936, the protection of industrial employees in Illinois against disabling occupational diseases was limited to a very narrow coverage by the state industrial compensation acts approved May 26, 1911, and June 29, 1915. Compensation for disability from an occupational disease was paid only for disability resulting from certain specifically enumerated dangerous processes. Experience here, as in several other states, brought discredit to the "specified schedule" and limited-list method. The Workmen's Occupational Diseases Act, in effect since October 1, 1938,²² is all-inclusive in its scope

²² As amended and in force July 1, 1945.

and provides compensation to employees for all occupational diseases in all industries which elect this type of coverage.

Under this broad law all cases of occupational disease due to new, as well as old, causes can be compensated, and types of industrial health hazards previously unrecognized are included automatically. Preventive action may then be taken by industrial hygiene and safety agencies to control these hazards to health.

Employees in enterprises which do not elect coverage under this act have the right of action in the courts, as have employees in enterprises which do not come under the provisions of the Illinois Workmen's Compensation Act either automatically or by election. Comprehensive data are not available to show the number of workers covered by the provisions of these acts.

These acts require the reporting of "compensable" injuries only to the Industrial Commission of Illinois, that is, those serious enough to cause more than one week of lost time, a permanent impairment, or death. More specifically, Section 30 of the occupational disease and workmen's compensation acts provides for the reporting of all occupational diseases and injuries arising out of and in the course of employment and resulting in death and other injuries and occupational diseases for which compensation has been paid under these acts. Thus, even in industries with coverage for permanent loss or disability, when the period of incapacity does not exceed seven days, the injury or disease is not compensable and hence is not reported. No compensation is paid for the first 7 days of disability from occupational diseases unless the period of disability exceeds 28 days. Specified sums are provided for fatalities and permanent disabilities. Compensation paid for temporary total disability of more than 6 working days equals 70 percent of the earnings, but must not be less than \$7.50 or more than \$18.00 per week. Payments begin on the 8th day and continue as long as the incapacity lasts, or until the total compensation paid equals the amount which would have been payable as a death benefit. In all compensable cases the employer is required to furnish the necessary first aid, medical, surgical, and hospital services, limited, however, to those reasonably required to effect a cure and, in the case of silicosis or asbestosis, for a period of not more than six months from the date of disablement.²³

²³ United States Public Health Service, *Manual of Industrial Hygiene*, chaps. 8, 11; C. O. Sappington. *Medicolegal Phases of Occupational Diseases*, Chicago, Industrial Health Services, 1939.

There were 1,036 occupational disease cases among the 54,638 injuries *reported* to the Industrial Commission of Illinois in 1945 as compensable. This figure is somewhat smaller than the 1,144 cases reported in 1944, but substantially larger than the 867 cases reported in 1943.²⁴ More than 85 percent of these cases were reported by manufacturing plants during each of the three years. The percentage of the total cases reported by plants in other industries ranged in 1945 from 5.3 for the wholesale and retail trades to 0.4 for firms engaging in finance, insurance, and real estate.

Analysis of the number of cases reported in 1945 by manufacturing concerns (883) according to the type of manufacturing industry showed the following: ²⁵ plants in the iron and steel industry, non-electric machinery plants, and producers of electrical machinery reported 44.5 percent of the 883 cases; manufacturers of transportation equipment, of nonferrous metals and products, and of food and allied products reported 30 percent. Not more than 5 percent of the cases were reported by any other single group of manufacturing industries.

Of the 1,036 cases of occupational diseases reported in Illinois during 1945, about two thirds of the cases (685) were caused by skin irritants (chiefly cutting oils), about one seventh (140) by industrial poisons (principally lead and trinitrotolvol exposures), and about one tenth (104) by the effect of repeated motion, pressure, or shock.

Data are not available showing the number of occupational disease cases reported from the Chicago-Cook County area. However, 47 percent (25,537) of the 54,638 compensable injuries reported in 1945, including occupational diseases, occurred in Chicago, 52 percent occurred elsewhere in Illinois, and about 1 percent occurred outside the state. Only 133 of the 385 fatal injuries (35 percent) were reported from Chicago.

Statistics on the number and kinds of occupational disease cases closed during 1945 are not yet available for Illinois, and no data can be obtained for cases reported by plants in the Chicago-Cook County area. Of the 47,959 compensation cases of all types closed in 1944 on which statistics were given in the 1944 report of the Illinois Department of Labor, 871 were classified under occupational diseases.

²⁴ Illinois Department of Labor, *Annual Report on Industrial Accidents in Illinois for 1944*, March, 1946, p. 14 (Table 11, including preliminary data for 1945).

²⁵ Statistics on types of manufacturing industries reporting occupational-disease cases and on causes of all types of disease reported are based on data in unpublished records of the Illinois Department of Labor.

This total included 10 fatalities, 3 cases of permanent total disability, 160 cases of permanent partial disability, including 4 disfigurements and 698 temporary disabilities. Total compensation paid to this group amounted to \$184,126, or an average of \$211 per case. This figure is lower than the average of \$241 paid in 1943 and of \$371 paid in 1942.

The group as a whole suffered 11,195 weeks of disability but the average for 80 percent of the group (the 698 temporarily disabled) was only 3.8 weeks. The following tabulation shows the total and average weeks of disability reported for each of the four groups.

| <i>Extent of Disability</i> | NUMBER OF WEEKS DISABLED | |
|-----------------------------|--------------------------|----------------|
| | <i>Total</i> | <i>Average</i> |
| Fatal | 1,671 | 167.0 |
| Permanent total | 714 | 238.0 |
| Permanent partial | 6,189 | 38.7 |
| Temporary | 2,621 | 3.8 |

Table 32 in the Illinois report analyzes the 871 closed cases of occupational diseases by cause and presents for each type the total and average number of weeks of disability, the extent of disability, and the total and average compensation cost.²⁶ Among these 871 compensated cases, silicosis was by far the most costly disability, accounting for 42 percent of all compensation paid, although constituting only 5.9 percent of all closed occupational disease cases. The explanation lies in the fact that one sixth of these silicosis cases either were fatal or resulted in permanent total disability and that the average cost of the 37 permanent partial disabilities was \$1,430.

While 568 of the closed cases (65.2 percent), on the other hand, were caused by skin irritants, 517 were temporary cases, with an average compensation cost of \$61. Cutting oils were reported as the cause in 132 cases.

Industrial poisoning was reported in 131 cases, 54 of which were attributed to the exposure of munition workers to toxic explosives. As during previous years, the leading single cause of industrial poisoning was lead and its compounds.

Another table in the Illinois report compares the number of cases of occupational diseases closed with the total number of cases of all occupational injuries closed during the years 1935 through 1944, together with the amount of compensation paid for all closed cases

²⁶ *Ibid.*, p. 87.

and for the occupational disease cases closed during the same years. In 1935 only 1.1 percent of the total number closed were occupational disease cases, and only 1.7 of the total compensation was paid for cases of this type. While the highest percentage (1.8) of occupational disease cases was reported in 1944, the ratio (1.6 percent) of their aggregate compensation cost to total compensation payments made in all injury cases closed in 1944 was substantially lower than in several of the preceding years (the highest was 2.2 in 1939). In all these years the ratio of compensated occupational disease cases to all occupational injuries remained below 2 percent—indicating how groundless were the fears expressed at the time the present occupational disease law was enacted.

Investigators of industrial health and hygiene problems generally recognize that many cases of occupational diseases are not sufficiently severe or characteristic to be reported, and of those reported many may not be considered compensable. This statement is as true of Illinois as it is of other states. Repeated field investigations by the U. S. Public Health Service have uncovered numerous unrecognized cases of occupational diseases among men still at work in the mines, the potteries, storage battery factories, manganese mills, hatting shops, explosives plants, and other industries. Other unrecognized cases have been found among workers ill at home or in sanatoria.

Accordingly, the \$184,126 paid to 871 closed compensable cases in Illinois in 1944 may be considered only a part of the over-all expense, and this cost by no means reflects the total amount of disability and impaired health caused by industrial health hazards. An effective statute for reporting all occupational disease cases is required. Physicians should report all diagnoses of occupational diseases to the health authorities, as they do communicable diseases, in order that preventive action may be taken. An increasing awareness of these problems by plant management and the medical profession is urgently needed to uncover all occupational disease cases and to emphasize the prevention of additional disabilities among similarly exposed workers. This function of the health authorities should be an important one.

Wherever valid cases of occupational diseases are discovered, immediate steps should be taken to investigate and to correct the existing health hazards to prevent additional cases. This program calls for joint efforts by plant management, the health department, and the labor department.

Plant management has the primary responsibility in this field, and labor organizations are becoming more and more aware of the problems involved. As industrial leaders have long since learned, it is far less expensive to prevent accidents than to compensate for them—so it is with occupational diseases. Their effective control depends upon: (a) the use of safe industrial equipment and methods, with proper engineering control of toxic and other unhealthful exposures; (b) periodic appraisals of exposures by trained plant personnel or industrial hygiene agencies; (c) adequate medical supervision for the early recognition and treatment of workers affected adversely by their work; (d) prompt reporting of occupational diseases; (e) fact-finding investigations to prevent further cases of occupational diseases; (f) routine inspection by enforcement agencies of control measures for all hazardous operations.

INDUSTRIAL HYGIENE ACTIVITIES OF OFFICIAL AND VOLUNTARY AGENCIES

by *Robert H. Flinn, M.D.*

THE PRECEDING CHAPTER described the industrial health and medical services in a substantial sample of the industries in the Chicago-Cook County area known to provide any of these services. Statistics about the occupational disease problem in Illinois, which largely reflect conditions in the Chicago-Cook County area, were presented also. This chapter discusses the industrial hygiene activities of official and voluntary agencies in the area, summarizes the data presented in both chapters, and outlines recommendations for the development and improvement of industrial health conditions and services in the area.

ACTIVITIES OF THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Organized industrial health and hygiene services began for the Chicago area in July, 1936, with the establishment in Chicago of the Division of Industrial Hygiene in the Illinois Department of Public Health. Although need for this type of health department service in Illinois, the third largest industrial state in the country, was recognized earlier, only minor activities for the protection and promotion of health among industrial employees existed until funds for the general extension of health services became available under the Social Security Act. At that time a well-qualified staff was selected and given further training which would fit them to organize and carry out a broad industrial hygiene program. During succeeding years this division has been strengthened materially in funds, personnel, and experience for carrying out its mission. All personnel was selected according to the qualifications and standards formulated by the Conference of State and Provincial Health Authorities of North America. Continual contact has been maintained with the Industrial Hygiene Division of the United States Public Health Service to ensure high and uniform standards of practice equal to those of other

states. It is now the only governmental agency in Illinois staffed and equipped to conduct a broad, balanced, industrial hygiene program.

The professional personnel of the Illinois Division of Industrial Hygiene consists of physicians, engineers, chemists, nurses, and a dentist, all trained especially for their particular work. It is operated as an impartial fact-finding, nonregulatory scientific agency with a philosophy of service, not enforcement, and education, not regulation. The services of this division are available without charge to any plant, industry, labor union, physician, engineer, nurse, or any resident of the state of Illinois who has a problem in industrial hygiene to solve. In rendering these services a report is always submitted to the person or agency requesting the service. No publicity is given to such surveys or services or to the conditions encountered. The results of investigations and recommendations are kept confidential.

FIELD SERVICES The Division of Industrial Hygiene of the Illinois Department of Public Health provides the following types of field service:¹

Medical

- Evaluation of environmental exposures
- Diagnostic aid to medical profession
- Maintenance of an occupational disease clinic for study of patients
- Formulation of industrial medical programs
- X-raying of workers' chests, using a mobile X-ray unit
- Consultation services for industrial venereal disease programs

Dental

- Dental surveys in plants to evaluate oral manifestations of occupational origin
- Assistance in formulating and promoting industrial dental programs
- Recommendations for improving industrial dental services
- Use of a mobile dental X-ray unit to give full-mouth X-rays to workers

Nursing

- Assistance in setting up nursing and first-aid programs
- Service as a clearing house for information on industrial nursing
- Development of public health programs among nurses

Engineering

- Plant surveys and studies of industrial processes and operations
- Collection of industrial atmospheric contaminants
- Recommendations for methods of control
- Information and designs on industrial exhaust systems
- Guidance in selecting and using respiratory and other protective equipment
- Assistance in designing engineering control measures

¹ Data on staff and services are taken from *What's New in Industrial Hygiene*, Illinois Department of Public Health, III (January-March, 1946), 6.

Chemical

Complete laboratory facilities for analyses of materials and air samples
Research in methods of collection and determination of atmospheric contaminants

Petrographic studies for silica

Assistance in developing methods for collection and analyses for plant chemists

INFORMATION SERVICES The Division of Industrial Hygiene acts as a clearinghouse for information on industrial hygiene and maintains an extensive library on all phases of this subject. Prompt and thorough attention is given to all inquiries. Publications on subjects of special interest are available, of which copies are supplied free on request. Competent speakers are also provided upon request to lecture to medical engineering, nursing, management, labor, or lay groups on the various phases of the industrial hygiene field.

In addition to these direct activities, the division is the channel through which all health activities of the Illinois Department of Public Health can be brought to industry. This function is particularly important, since the amount of sickness and absenteeism in industry from nonoccupational causes is far greater than that resulting from occupational causes. One example of the general health services available to industries is the tuberculosis case-finding program conducted in co-operation with the state health department's Division of Tuberculosis Control, in which chest X-rays of industrial employees are made without charge.

The bulletins of the Division of Industrial Hygiene also describe specific ways in which its services can be utilized to material advantage by industrial personnel for production, industrial relations, medical, nursing, dental and safety programs, and by labor organizations.

Authority for the development of an industrial hygiene program in Illinois is contained in Chapter 127, Section 55, and Chapter 111½, Sections 22-24, of the general health laws of the state, which outline the powers and duties of the Illinois Department of Public Health. Authority for the development of industrial health standards and their enforcement rests with the Industrial Commission of the Illinois Department of Labor. The policy of the Division of Industrial Hygiene is to serve and study, leaving enforcement to the labor department and its Industrial Commission. The acceptance of this policy by both labor and industry is shown by their wide acceptance

of its services, which are directed not only toward the effect of occupation upon health but also toward all other influences and factors relating to health conservation.

SERVICES RENDERED IN 1945-46 The division was able to provide services affecting 396,104 workers in 1945-46, about 14 percent of the total working population. The small percentage served indicates, to some extent, the problem facing the division in the development of an adequate program for the protection and betterment of the health of the employed population in the state. Since its very beginning, the Division of Industrial Hygiene has directed its services toward problems in the manufacturing and mechanical industries, because a greater number and variety of potential health hazards exist in this group than in other industrial groups. This concentration of service upon the manufacturing and mechanical industries does not imply, however, that the other industrial groups do not need study and service, since significant health hazards, at times of major importance, exist in every type of industry. To meet the problems of the other industries would require considerable expansion of the division's services.

Statistics taken from the annual report of the Division of Industrial Hygiene for the fiscal year 1945-46 indicate that service was provided to 509 plants and that 396,104 workers were covered. Plant managements requested the service in 201 instances, and 151 visits were made for the Chicago-Cook County Health Survey. In 92 instances the Division of Industrial Hygiene suggested that the service be provided. Other groups which requested plant surveys of various types were: labor unions (24), workers, (21), War Manpower Commission (1), health officers (16), and the Division of Highways of the State of Illinois (3). The types of service given and the number of plants visited were as follows:

| <i>Types of Service</i> | <i>Plants Visited</i> |
|---|-----------------------|
| Introductory or promotional visits | 107 |
| Surveys of working environment | 187 |
| Technical studies of potential health hazards | 118 |
| Appraisals of plant medical department | 26 |
| Consultation regarding: | |
| Problems of the working environment | 221 |
| Medical programs | 35 |
| Nursing services | 114 |

Other services specifically:

| | |
|--|----|
| Promotion (only) of tuberculosis X-ray surveys | 29 |
| Promotion (only) of venereal disease program | 8 |
| Program (only) of dental survey | 10 |
| Promotion (only) of Industrial Nurses' Seminar | 8 |
| Promotion of Industrial Nurse Section | 12 |
| Radium studies | 35 |
| Nuisance complaints investigated | 8 |
| Follow-up on compliance with recommendations | 31 |

The Division of Industrial Hygiene made 499 recommendations for improvements in working environment of which 33 were carried out, and 342 recommendations in regard to health and welfare, of which 31 were followed. Seventeen different types of specific services were listed in the division's report, of which the following appeared to be of particular importance: tuberculosis X-rays arranged for 36 plants, with 11,168 X-rays made; dental services for 6 plants, with 1,694 mouths examined; medical examinations made of the workers in two plants; 1,295 samples collected for laboratory analysis or examination; 2,367 laboratory examinations made for evaluating possible health hazards; 1,576 field determinations made of atmospheric conditions; 3,812 field determinations made of physical conditions.

Of the 509 plants visited, 402, or 79 percent, were in Chicago and Cook County. Of 2,367 laboratory determinations made for evaluating possible health hazards, 1,233, or 52 percent, were for industries in Chicago and Cook County. Hence, industrial plants in the Chicago-Cook County area are receiving their proportionate share of services from the Illinois Department of Public Health.

PERSONNEL EMPLOYED AND NEEDED The personnel of the Division of Industrial Hygiene at the time of the survey was as follows:

| | |
|------------------------------|--------------------------------------|
| Acting chief of division | 1 |
| Physicians | 2 (1 full time and 1 half time) |
| Dentist | 1 |
| Industrial nurses | 2 |
| Industrial hygiene engineers | 5 |
| Dental X-ray technician | 1 |
| Chemists | 3 |
| Clerks | 3 |
| Total | 18 (including 1 half-time physician) |

Since larger funds are available for the present fiscal year, it is hoped to secure additional personnel as soon as possible. The laboratory at the Chicago headquarters is very well equipped to handle all present services, and any necessary additional equipment can be procured readily.

To offer a complete service to more than nine thousand manufacturing plants in Chicago and Cook County, which comprise more than two thirds of those in the state, at least one member of the division should visit each plant annually or biennially, in addition to offering more health services to a much greater number of non-manufacturing establishments. It is impossible to provide this amount of service with the present staff and facilities.

If present plans for expansion are effected, the division would be in a strong position to do all the scientific fact-finding and research required to control occupational diseases, to serve as a spearhead into industry for other health department services, and to promote and help organize more adequate medical, nursing, and dental services in industrial plants.

Because of the highly technical and highly varied nature of industrial health and hygiene services and the serious nation-wide shortage of trained men in this field, local health departments, including those of Chicago and Cook County, are not now prepared to begin a comprehensive industrial hygiene program. Since the Division of Industrial Hygiene in the Illinois Department of Public Health is a growing, well-equipped organization with more than ten years' experience in practical field work in industrial health and hygiene, and since it is located in the heart of the Chicago industrial area, it would appear preferable for the state health department to carry on this work until the local health agencies are able to acquire funds and personnel to set up industrial hygiene units in their own organizations. The Illinois Department of Public Health is prepared to carry on this work in Chicago and Cook County, where more than two thirds of the Illinois plants are situated. It is logical and desirable for the state health department to serve these local health departments on their industrial hygiene problems. The state health department laboratories in Chicago have adequate facilities for all necessary laboratory work and for special investigations.

If and when the Chicago Health Department and the Cook County Department of Public Health find it feasible to organize an industrial health and hygiene program of their own, augmented by

local ordinances, it appears altogether desirable that the state health department should have technical advisory supervision over the program from its inception to ensure uniform and accepted standards of industrial hygiene practice throughout the city of Chicago, Cook County, and the remainder of the state.

The industrial hygiene activities of other governmental units, such as the Illinois Department of Labor and the Chicago Department of Buildings, are necessarily limited to the engineering detection and control of environmental health hazards, a small part of the broad industrial hygiene program just outlined. In doing any fact-finding work in studying health hazards, these departments are duplicating the work of the health department and are impairing the performance of their own proper functions.

The Illinois Department of Public Health is willing and able to do scientific fact-finding studies regarding industrial health hazards and to report the facts to the regulatory agencies. Then the enforcement agencies would be in a proper position to interpret the findings in the light of existing laws and regulations and to ensure compliance. Moreover, their position as a law enforcing agency would be strengthened materially by having evidence from an outside source that could not be construed as biased. A co-ordination of activities by mutual agreement between the health and enforcement groups is urgently needed and should be effected immediately. It should be fundamental that the Illinois Department of Public Health shall devote its energies to health functions and that the regulatory agencies devote their efforts to the enforcement of laws and regulations.

For long-range planning, however, it is desirable that the industrial hygiene functions, authority, and purpose of the Illinois Department of Public Health shall be recognized legally and that adequate funds and personnel shall be provided by legislative enactment.

ACTIVITIES OF THE ILLINOIS DEPARTMENT OF LABOR

The Illinois Health and Safety Act (approved March 16, 1936, and as subsequently amended), provides in Section 3 that it shall be the duty of every employer liable under this act to provide reasonable protection to the lives, health, and safety of his employees. The Industrial Commission of Illinois is empowered to make, promulgate, and publish such reasonable rules from time to time as will effectuate

these purposes. Employers and employees engaged in farming and in coal mining are specifically exempted from the provisions of this act in Section 2.

To accomplish the above purposes, the Industrial Commission of Illinois is empowered by Section 4 to make such rules only for: (a) the proper sanitation and ventilation of all places of employment to guard against personal injuries and diseases; (b) the arrangement and guarding of machinery and the storing and placing of personal property to guard against personal injuries and diseases; (c) the prevention of personal injuries and diseases by contact with any poisonous or deleterious materials, dusts, vapors, gases, or fumes; (d) the prevention of personal injuries and diseases caused by exposure to artificial atmospheric pressure; (e) The construction, setting, placing, erecting, and maintenance of scaffolds, platforms, or other similar frameworks. Such rules of the Industrial Commission of Illinois have the force and effect of law (Section 5).

Under Section 17 of the act, it is the duty of the Illinois Department of Labor to enforce the rules of the Industrial Commission of Illinois promulgated by virtue of this act. The labor department, through authorized agents, is empowered to visit and to inspect all places of employment in the state affected by any rule made pursuant to Section 4 of the act, excepting secret processes. The labor department is required to give employers proper notice of any violation of rules made pursuant to Section 4. Penalties are prescribed for failure to comply with these rules after due notice by the labor department.

Rules currently in force are to be found in the publication entitled *Health and Safety Act and the Health and Safety Rules of the State of Illinois in Force September 1, 1944*, published by the Industrial Commission of Illinois (205 West Wacker Drive, Chicago 6, Ill.). The *Health and Safety Rules* are divided into the following parts:

A. Purpose and application, scope, arrangement, and numbering, definitions, and interpretation of health and safety rules.

B. Rules and regulations relating to guarding of mechanical power-transmission apparatus, prime movers, and moving parts of machinery, and guarding of operation of machinery.

C. Rules relating to removal of dusts, vapors, fumes, or gases from grinding, polishing, and buffing operations.

D. Rules relating to construction of underground tunnels, whether

or not such construction is under compressed air except as herein-after stated.

E. Rules and regulations relating to the removal of dusts, gases, vapors, fumes, and mists released from spray, flow, dip, and brush coating operations.

F. Rules and regulations relating to the safety and health of workers employed in ferrous and nonferrous operations where castings of base metals are made and all operations in connection therewith.

G. Rules and regulations relating to industrial housekeeping and sanitation, and wash, locker, rest, toilet, and lunchroom requirements.

Penalties for violation of the rules and regulations are set forth in Section 18 of the Health and Safety Act.

The Division of Factory Inspection in the Illinois Department of Labor is concerned with the enforcement of the Health and Safety Rules promulgated by the Industrial Commission of Illinois. Its Industrial Hygiene Unit has a director and six chemists and chemical engineers who are concerned with the enforcement of the health and safety rules pertaining to that field of industrial hygiene dealing with the prevention of occupational diseases by the engineering control of unhealthful exposures in the workroom. A chemical laboratory is available for the analysis of air and other samples obtained by visits in the field.

The activities of the state labor department in this field were drastically limited until after the passage of the Health and Safety Act in 1936. This act recognized the existence of industrial health hazards and the need for their control. The activities of the Industrial Hygiene Unit gradually expanded, until ten engineers were employed in 1942-43. The needs of the armed forces caused a reduction in personnel, but the losses are being made up now. It is expected that two additional chemists will be employed, making a total of eight.

The activities of this unit have been concerned with the evaluation and the elimination of industrial health hazards throughout Illinois. In one account of its activities,² there were included:

(a) Long-range study of industries in which health hazards are known to exist, with the purpose of determining which occupations or locations in the plant are hazardous, and how the hazard can be controlled. Such studies were made in lead storage battery plants, brass foundries, arc welding operations, and soldering operations.

² "Industrial Hygiene Division Uses Applied Science to Eliminate Health Hazards," *The Illinois Labor Bulletin*, II (June 30, 1942), 22.

- (b) Investigations of complaints from workers or their organizations regarding health hazards.
- (c) Studies of claims for unemployment compensation where the claimant leaves his job because he considers it hazardous.
- (d) Consultation with management on existing or projected operations which involve the use of hazardous materials.
- (e) Co-operation with industrial plants in setting up facilities for conducting their own industrial hygiene studies.

In the latest available report,³ January 31, 1943, it was pointed out that to cover industrial hygiene conditions in more than thirteen thousand industrial establishments in Illinois there had been a staff of only nine men for both field and laboratory work. The field work carried these men to all parts of Illinois. It was emphasized that if industrial health hazards in Illinois were to be covered more adequately, the staff and its facilities must be greatly expanded. During 1942 more than two thousand six hundred plant investigations were made throughout the state, which resulted in the issuance of more than two thousand orders for the control of hazards. Three fourths of these investigations were the result of claims for unemployment compensation, in case the worker felt that continued employment at that occupation would endanger his health. It was reported that about 50 percent of these claims were justified over a long period and that dangerous conditions were sometimes found in other parts of the plant, even when the specific complaint was not justified. Another important source of investigation was the complaints received from organized labor.

Educational activities had been expanded during this period to acquaint as many people as possible with the potential health hazards of their work. Lectures were given on industrial poisons and other industrial hazards to safety engineering classes, medical students, chemistry students, conventions of labor organizations, and the National Safety Congress. Exhibits were presented at several union conventions and at the National Chemicals' Exposition. Emphasis was also placed on educational activities in connection with the proper maintenance of exhaust systems and other protective equipment.

After discussing plans for future expansion in connection with more adequate coverage of potentially hazardous industries, acceleration of extensive studies of specifically hazardous industries and

³ "Responsibility of Industrial Hygiene Division to War Production," *The Illinois Labor Bulletin*, III (January 31, 1943), 3.

occupations, checking of validities of "safe limits" for air contaminants, extension of the educational program, and the improvement of field sampling and laboratory procedures, it was stated that the aims of the Industrial Hygiene Unit could be summarized as the protection of the greatest possible number of workers in Illinois from industrial health hazards by investigations, education, and cooperation with labor and management in solving their problems.

No recent summary or report could be obtained regarding the current activities of this unit. Conferences with its personnel indicated that the bulk of the activities of its present staff were concerned with investigations and enforcement of the Health and Safety Rules, resulting largely from complaints of workers or their organizations and from reports or referrals from the sixty-odd district safety inspectors. Other common causes for investigations are allegations in connection with unemployment compensation, occupational disease claims, requests from management, and recheck visits to ensure compliance with formerly issued orders. This last function was retarded by lack of personnel until recently when two men returned from the armed forces. No physician has been employed by this unit for several years.

This unit normally spends a little more than half time visiting plants, depending somewhat on the amount of laboratory work. The great majority of visits do not require laboratory samples, as control equipment often can be checked by air velocity determinations, and frequently inspections are visual, depending upon experience at similar operations. The services of a well-qualified ventilating engineer are available from another section of the Factory Inspection Division of the Illinois Department of Labor.

The customary procedure of members of the industrial hygiene staff is to write orders concerning violations of the Health and Safety Rules and to return in 30 days or so to ensure compliance with the orders. They have not been able to maintain regular schedules but plan to make regular visits to such potentially hazardous industries as lead storage battery plants and to take more air samples on such operations as welding, electroplating, heat treating, and lead storage battery fabrication. If time permits, more studies will be made in connection with regular surveys of industries or operations having exposures to such substances as hydrocyanic acid in electroplating and heat treating and trichlorethylene.

It was stated that many plans had been abandoned, especially in

the past three or four years, because of shortages of personnel and daily interruptions of scheduled work.¹

Of their problems, it was stated that in general many plants are overcrowded and have put additional operations into their work-rooms without much control. The over-all picture of health hazards likely to produce occupational diseases has been changed rapidly. During the war many hazards arose because of the rush into large-scale production and because of many new operations. These conditions were offset in some instances by the freeness of funds for control measures and by government supervision. After the war these two features no longer existed, and there is less readiness today to establish effective control of occupational disease hazards. While the situation with regard to control of health hazards, however, is better now in many plants than it was before the war, in others it is definitely worse.

Improvement in plant sanitary facilities and illumination was indicated, but there had been some deterioration in the proper application of general or local exhaust ventilation. The general occupational disease problem is probably as great now as before the war. The reports of occupational diseases show only those claims made to the Industrial Commission of Illinois. As happens generally, many cases probably do not become sufficiently disabling or characteristic to become compensable. A model, workable law is needed to ensure prompt recognition and reporting of all occupational disease cases—a general problem in the United States. Uniform legislation also is needed to provide that standards of acceptability of operating machinery and control equipment be the same in the different states where industrial concerns may have their plants.

About 70 to 80 percent of the work of this unit is in the Chicago area. This percentage is consistent with the proportion of Illinois industries in this area. In addition to manufacturing plants, the unit is concerned with such service plants as garages, laundries, dry cleaning establishments, and railroad service shops. No jurisdiction exists over coal mines, service organizations, farming activities, or interstate carriers.

CHICAGO DEPARTMENT OF BUILDINGS

The only active industrial hygiene function of the city government of Chicago has been the inspection and testing of natural ventilation and mechanical ventilation equipment, including nuisance control

equipment for the removal of dust, fumes, gases, and odors. This limited function, dealing only with the engineering control of atmospheric contaminants from the industrial hygiene viewpoint, has been located in the Chicago Department of Buildings since the Section of Heating, Ventilation and Industrial Sanitation was transferred there from the Chicago Health Department in January, 1945. This transfer resulted from the recommendations contained in *A Report on the Regulatory Inspectional Services of the City of Chicago and a Plan to Simplify Procedures*, prepared and published in 1945 by the staff of the City of Chicago Budget Survey Committee and sponsored by the Chicago Association of Commerce and The Civic Federation.

This report recommended that all inspectional services pertaining to buildings and their equipment and appurtenances be consolidated in appropriate bureaus of an executive department of the city government. Specifically, it recommended that ventilation inspection, then in the health department's Section of Heating, Ventilation, and Industrial Sanitation be included in the proposed Department of Building and Housing. The report also proposed that mechanical ventilating equipment of the pressure or exhaust types, then inspected by the Chicago Board of Health, be assigned to the recommended new department. Efforts should be made, the report stated, to co-ordinate the inspections performed by the city, the Illinois State Factory Inspection Division, and the liability insurance companies.

The city ordinance effecting this transfer was enacted January 8, 1945, by repealing Sections 9-8 and 9-9, and amending Sections 9-6, 9-11, and 9-12 of the Municipal Code of Chicago, dealing with health department responsibility and functions concerning ventilation. Section 81-8, dealing with ventilation, was changed to read

"Additional ventilation.—If the air condition in any habitable room becomes objectionable due to causes other than the occupancy by human beings and the *Commissioner of Buildings* finds that the health and comfort of the human occupants is endangered thereby, additional ventilation by natural or mechanical means, approved by the *Commissioner of Buildings*, shall be provided."

In Section 81-20, dealing with ventilation readings, the phrase "commissioner of buildings" is substituted for "board of health." Section 13-1 of the code was amended to include a ventilation inspector in charge, ventilating engineers in charge, ventilating engineers, and ventilating inspectors among the authorized personnel in the build-

ing department. Two new sections, 13-7.2 and 13-7.3, were added, organizing a ventilation division in the building department. This division has the following powers and duties:

Enforce the provisions of Chapter 81, pertaining to the ventilation of rooms or spaces to provide air conditions which will protect the health and comfort of the occupants thereof;

Enforce the provisions of this code pertaining to ventilation, industrial sanitation, and air conditions which are noxious, dangerous, or detrimental to health and those pertaining to heating conditions insofar as they affect ventilating and air conditions;

Enforce all rules and regulations of the department of buildings based on the requirements contained in the provisions of this code pertaining to industrial sanitation and air conditions;

Examine and approve drawings and plans and issue permits for the installation of all equipment required for ventilation, air conditioning, and systems for the removal of dust, smoke, or gas in accordance with the provisions of this code.

Inspect and test all new and remodeled installations of mechanical ventilating or air conditioning systems, and systems for the removal of dust, smoke, or gas, and if such are found to fulfill the requirements contained in this code, issue a certificate of approval to the owner or the contractor who made the installation;

Investigate and enforce all license regulations of this code prescribing ventilation and industrial sanitation standards, and heating as it affects ventilation and industrial sanitation.

Inspection of ventilating systems.—The inspection of mechanical ventilating or air conditioning systems shall be made as soon as possible after the person responsible for the installation, adjustment, and test of the system has notified the commissioner of buildings in writing that the system has been adjusted and tested and is in good operating condition and that it fulfills all the requirements prescribed herein. The division of heating, ventilating, and industrial sanitation shall inspect and test all ventilating equipment annually to determine whether it is in proper condition to comply with the provisions applicable thereto, and shall make such additional inspections and tests as the commissioner of buildings shall direct.

Section 46-40 of the code also was amended to read "Inspection required.—Every mechanical ventilating system shall be inspected annually by the commissioner of buildings."

This ordinance gives broad powers to the building department with regard to engineering control of industrial health hazards resulting from air contaminants, and for industrial sanitation, thereby removing responsibility for all such functions from the Chicago Board of Health.

According to the 1940 *Annual Report* of the Chicago Board of

Health, the latest report published, the Section of Heating, Ventilation, and Industrial Sanitation was carrying on its work at that time with some difficulty because of reduced personnel and an increased volume of work and was giving precedence to those activities having the greatest community health value.⁴

The present activities of the Bureau of Heating, Ventilation, and Industrial Sanitation in the building department were stated to be concerned with inspection, testing, code enforcement, and issuing certificates of approval for ventilating and heating systems. The licensing provisions of the Municipal Code of Chicago are enforced. Other functions pertain to proper sterilization of clothes by laundries, control of unhealthful industrial products, public nuisances, except smoke abatement, and heating and ventilation of public buildings in relation to health and comfort.

The work of the bureau falls chiefly into the following four categories:

a) Investigation of complaints. Numerous industrial hygiene problems are encountered here as well as neighborhood pollution of air by factories. Sanitary provisions checked may include seats, toilets, washing facilities, gases, and any condition of the premises or materials encountered considered detrimental to health. Few attempts are made to evaluate possible health hazards, but recommendations are made to correct insanitary conditions.

b) Approval of plans for ventilating systems in new or remodeled structures and follow-up inspections to ensure proper installations.

c) Inspection of many new industrial plants for licensing purposes. Proper equipment and sanitary provisions are required to obtain a license to operate certain businesses. Those industries classified as placing additional burdens on the community because of the need for their control are required to obtain licenses (see Part VII of the Municipal Code of Chicago, "Businesses and Occupations").

d) Annual fee inspection of all mechanical ventilating equipment as required under the Municipal Code of Chicago. The fee is based on the capacity of the equipment. This inspection is the principal time-consuming activity.

To perform all these duties the bureau has only twenty men to visit the 10,000 premises in Chicago where annual inspections of mechanical ventilating equipment are required by law. In addition,

⁴For further discussion of the activities of the Section of Heating, Ventilation, and Industrial Sanitation of the Chicago Health Department in 1940 see Chapter 22.

there are about four thousand annual inspections of businesses for new licenses and renewal of licenses, as time permits. Investigation of complaints is also a major function. Little or no time is available for canvasses or surveys. It was stated that more than fifty inspectors would be required to cover the bare necessities. Few trained personnel and no equipment are available here for industrial hygiene studies or surveys. On rare occasions the services of the health department laboratories are utilized for chemical analyses of field samples.

It should be obvious that this bureau is neither staffed nor equipped to conduct industrial hygiene investigations or surveys in addition to the large volume of work it has in connection with its inspections of heating and ventilating equipment. Moreover, in the latter field, inspections can have little value except as a necessary step in the collection of license fees. The bureau should confine its functions to its proper field, the inspection and approval of heating and ventilating equipment to ensure proper compliance with the Municipal Code of Chicago. The term "industrial sanitation" is a misnomer as applied here to so limited a function and should be dropped. The report on the city's inspectional services, previously cited, states on page 48 that "Industrial Sanitation" covers a much wider field than is covered by this section. Therefore, the unit might better be designated "Ventilation Inspection Section" to indicate its restricted and proper field. The present Section of Heating, Ventilation, and Industrial Sanitation should be limited to matters pertaining to mechanical ventilation." The report also states, on page 76, that "the Survey Staff has made no recommendations to curtail any of those activities which may be necessary to control directly the health of the city. The proposed changes in organization pertain to inspections of a mechanical or engineering nature and to proper standards of living, all of which can be performed satisfactorily and more economically in combination with other building inspections."

The intent of the staff of the City of Chicago Budget Survey Committee was not carried out when the Chicago City Council passed the ordinance of January 8, 1945, transferring en bloc the personnel, functions, and authority of the Chicago Board of Health on industrial hygiene and sanitation matters, except the laboratories, to the Chicago Department of Buildings. Authority on matters pertaining to health and hygiene clearly should have remained with the Chicago Board of Health.

The heating and ventilation inspections and enforcement functions of the building department keep its present staff more than busy, without entering the industrial health and hygiene field. Scientific and fact finding studies of industrial health problems are a proper function of the health department.

As the Chicago Health Department is not now in a position to conduct an industrial hygiene program, the previously described services of the Division of Industrial Hygiene of the Illinois Department of Public Health in Chicago are available to the Chicago Department of Buildings for technical consultation and fact-finding surveys, and should be fully utilized.

ACTIVITIES OF THE CHICAGO HEALTH DEPARTMENT

Since the transfer of the Section of Heating, Ventilation, and Industrial Sanitation from the Chicago Health Department to the Chicago Department of Buildings in January, 1945, industrial hygiene activities in the health department have been practically nonexistent.

The six chemists in the chemical laboratory are equipped fairly well to perform ordinary toxicological analyses of air and material samples, but they reported only one industrial hygiene activity for 1945, the determination of carbon monoxide in eighty-three air samples, most of which were outdoor samples taken on the city streets. There has been little or no call for any laboratory services relating to industrial hygiene from the building department or from other agencies.

At the present time the industrial hygiene activities of the chemical laboratory have all but ceased because of lack of demand. The sharp decline has been partly coincidental with the transfer of field inspections from the jurisdiction of the health department.

The physicians in the Communicable Disease Section of the Chicago Health Department occasionally investigate alleged industrial illnesses, such as a recent outbreak of "Q" fever at a large meat packing plant, to determine whether the problem is within the jurisdiction of the health department and to offer any possible assistance. There are no occupational disease investigations in the usual sense of the word. Beginning in 1938, the Chicago Venereal Disease Control Program made an intensive drive to obtain blood tests from as many persons as possible. This phase of health department work was described in Chapter 27, Venereal Disease Control.

An industrial surgeon was employed in 1928 by the Chicago

Health Department in a joint project with the Illinois Department of Public Health. This arrangement continued until 1935. Since that year, there has been no industrial health work by medical personnel, often a source of annoyance when special industrial health problems have arisen. The studies of health hazards made in the department are scarcely worth mentioning, because they have been confined largely to the observations made by the ventilating engineers of conditions investigated as a result of complaints and during their annual inspections of ventilating equipment.

Normally, a city with industrial problems of such magnitude as are those of Chicago should have a unit of well-trained personnel for handling industrial health and hygiene problems, backed by a well-planned city ordinance. In a program of long-range planning, a well-balanced unit in the Chicago Health Department is desirable, including especially trained physicians, engineers, chemists, nurses, and related personnel. This is in accord with the state health department's policy of decentralization.

In view of the present-day shortage of such personnel and the presence in the city of the active and experienced Division of Industrial Hygiene of the Illinois Department of Public Health, it is suggested that the city continue to depend upon the state health department until the Chicago Health Department is able and willing to provide adequate industrial hygiene services. In order to assist the Chicago Health Department in setting up an industrial hygiene division, the Illinois Department of Public Health should consider making available to the local health department key personnel to develop a program to the point where the local department is in a position to assume full responsibility. The personnel on loan from the state health department would be responsible administratively to the city health officials and would receive technical supervision from their own department. Such a unit should conduct the normal routine industrial hygiene functions for the Chicago Health Department and obtain any additional services for special studies and laboratory work from the Illinois Department of Public Health.

ACTIVITIES OF THE COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

The Cook County Department of Public Health has no organized industrial hygiene activities and no staff for this purpose.

The department has maintained excellent relationships with the industrial nurses throughout the county with many resulting ad-

vantages. The department has held numerous consultations with personnel of industrial establishments, especially during the war, on such problems as the procurement of industrial physicians and nurses, the desirability of preplacement examinations, and the promotion of mass chest X-ray and blood surveys for the control of tuberculosis and venereal diseases.

The tendency generally among state health departments has been toward decentralization of activities into local health departments because of the difficulty of conducting an active state-wide program from one city. This statement applies particularly to industrial hygiene activities. Of course, the efficiency of local programs is dependent usually upon the progressiveness of the local health departments, but a state health department can control the quality of specialized personnel when grants of funds are involved. Industrial hygiene services, like other public health services, should be applied evenly to the people affected.

The Cook County Department of Public Health recognizes the need for an active, balanced industrial health and hygiene section to provide services to its industrial population. With its present limited budgets and personnel, however, it must meet first the more urgent basic requirements in the general public health field. Specialized services, such as industrial hygiene, must come later.

Until it is practicable for the Cook County Department of Public Health to organize an industrial hygiene unit, it should continue to depend upon the Illinois Department of Public Health for industrial hygiene services. Close co-operation should be continued in promoting industrial hygiene services to industry, mass diagnostic surveys, health education in industry, and plant medical services.

ACTIVITIES OF VOLUNTARY AGENCIES

Numerous voluntary activities in the industrial health and hygiene field are carried on in this area, some rather broad and others restricted. The many health and welfare agencies interested in furthering the health and well-being of the industrial segment of the population can perform valuable services, especially if they are coordinated. Among the more active in this group are the following:

American Medical Association

Illinois State Medical Society

Chicago Medical Society

American Association of Industrial Physicians and Surgeons

American College of Surgeons
 American Industrial Hygiene Association
 Chicago Dental Society
 Industrial Nurses' Section, First District, Illinois State Nurses' Association
 Insurance companies
 Private consultants
 Council of Social Agencies of Chicago
 Social Work-Labor Project
 Health Education in Industry Project
 Industrial Hygiene Foundation of America, Inc.
 Visiting Nurse Association of Chicago
 Illinois Society for the Prevention of Blindness
 Joint Committee on Occupational Ophthalmology

The following agencies also provide services or health education programs available to industrial workers as well as to all others in the community.

The Hospital Service Corporation of Chicago (Blue Cross Plans)
 The Tuberculosis Institute of Chicago and Cook County
 The American Red Cross
 The Chicago Association of Commerce
 The National Safety Council

Time did not permit an extensive study of the industrial health and hygiene activities of these organizations. Many have various facilities and services for health education of groups, such as industrial workers, that should be utilized freely by plant medical departments and official industrial hygiene agencies. These activities are described in some detail in the *Health Education Handbook for Chicago and Cook County*, published in 1946, by the Council of Social Agencies of Chicago. The major activities of each of these agencies in relation to industrial health will be described briefly in the following paragraphs.

THE AMERICAN MEDICAL ASSOCIATION This association, with headquarters in Chicago, has been a national leader in the formulation of policies and the dissemination of information relating to high standards of medical practice, medical education, hospitalization, and medical ethics, advancement of the welfare of the patient, and public health. Its Council on Industrial Health, composed of leading authorities in industrial medicine, has been active on policy matters

and the stimulation of interest, both within and without the profession, in the provision of more adequate medical and health services for the large and vital industrial population. The council has sponsored and helped to develop committees on industrial health in the state medical societies, and in the local medical societies of nearly every sizable industrial community. Members of these committees are prepared to co-operate with other community groups to improve industrial health. Other specialty groups in medicine have begun to realize that help from these industrial health committees is essential if many problems relating to illness are to be solved and that industry offers unparalleled opportunities for clinical investigation and observation. These activities augment the services of individual physicians already employed for full or part time in industry. Both the Illinois State and the Chicago medical societies have active committees on industrial health working closely with the council. Publications of the Council on Industrial Health outline the health services which should be available to industry regardless of size.⁵

THE ILLINOIS STATE MEDICAL SOCIETY The Committee on Industrial Health of the Illinois State Medical Society functions with regard to specific policies and conduct on problems in the industrial health field. It keeps the medical profession informed on industrial health matters through a section in the *Illinois Medical Journal*, wherein appear both original articles and material reprinted from other sources.

The committee points out that the primary responsibilities of the industrial physician are the care of workers with industrial injuries and occupational diseases and the provision of generally recognized industrial medical services to keep workers fit and on the job, that is, a program of preventive medicine. The responsibility of industrial physicians is not recognized as including general medical care.

In some industries throughout the country, public relations' policies and requests of labor unions have caused industrialists to consider the provision of medical care to employees. The Committee on Industrial Health of the Illinois State Medical Society is planning a program to crystallize thinking on this subject and to demonstrate the desirability of keeping industrial medicine the specialty it has become.

THE CHICAGO MEDICAL SOCIETY The Committee on Industrial

⁵ L. D. Bristol and Carl M. Peterson, "Industrial Health," *Journal of the American Medical Association*, CXXV (August 19, 1944), 1,106.

Health of the Chicago Medical Society acts as a liaison group between the society and its various other committees and all industrial health activities. It has been co-operating actively with the society's committees on tuberculosis control and prepayment medical care plans insofar as these problems affect industrial workers. It also has worked closely with the Committee on Health Education of the Council of Social Agencies in formulating a health education program for industry.

For several years, this committee also has sponsored and assisted in arranging an annual meeting on industrial health for each of its branch societies in Chicago. These meetings are of considerable value in acquainting the private physicians with the specialized problems in industrial medicine and in showing how more effective services may be rendered industrial establishments and their employees by closer co-operation between these groups.

THE AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS This association, with headquarters in Chicago, has the following objectives: to foster the study and the discussion of the problems peculiar to industrial medicine and surgery, to develop methods adapted to the conservation of health among workers in industries, to promote a more general understanding of the purposes of the medical care of employees, and to unite members of the medical profession specializing in industrial medicine and surgery into one organization for their advancement in the practice of their profession.

The association holds an annual meeting of nation-wide interest to those concerned with industrial health problems, in co-operation with the American Industrial Hygiene Association, the American Conference of Governmental Industrial Hygienists, the American Association of Industrial Nurses, and the American Association of Industrial Dentists. These meetings accomplish a great deal in stimulating further interest and progress in the field of industrial health and hygiene. The association's official publication is the monthly journal *Industrial Medicine*.

The American Foundation of Occupational Health.—This is a trust organized by the officers of the American Association of Industrial Physicians and Surgeons to carry out its educational programs in medical schools and throughout industry and the lay public. In a booklet entitled *The American Foundation of Occupational Health—Its Purpose and Program*, published in September, 1946, the

foundation outlines plans and methods for accomplishing its objectives.

THE AMERICAN COLLEGE OF SURGEONS The Committee on Industrial Medicine and Traumatic Surgery of the American College of Surgeons has made wide-spread investigations of medical services in industry and has formulated a *Minimum Standard for Medical Service in Industry* which is applicable to all industrial organizations regardless of their size. Up to December 31, 1945, a total of 1,941 industrial establishments, representing over 5,500,000 employees, had been surveyed, 1,137 of which (or 59 percent) have been approved fully or provisionally. A certificate of approval is granted to an industrial establishment in which the medical organization and service are approved fully and are of such a nature as to give reasonable assurance of continued compliance with the Minimum Standard.⁶

THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION This association has a Chicago chapter, which actively promotes interest in industrial hygiene problems in the area. It holds monthly meetings, which are attended by local industrial hygienists, physicians, safety engineers, nurses, and representatives of many Chicago and Cook County industries. Discussions and seminars at these meetings bring out new information and developments in this field. The association has also sponsored industrial hygiene sessions at such meetings as the Midwest Safety Conference and the Chicago Production Exposition.

THE AMERICAN DENTAL ASSOCIATION AND THE CHICAGO DENTAL SOCIETY Both associations are located in Chicago and make available a great many materials and services used in programs of dental health education. The Chicago Dental Society has organized a diagnostic service for industrial workers that is slowly gaining recognition. It maintains a portable examination unit, including X-ray equipment, for use in diagnostic surveys of industrial workers. Upon request, a dental technician visits a plant and takes full-mouth X-ray films of employees. After the films are processed, a designated dentist from the society visits the plant and makes a complete dental examination. Each worker is advised as to his needs for control of dental infection and tooth conservation. Whenever indicated, he is advised to visit his dentist, and copies of the report are sent to his dentist.

⁶ Gaylord R. Hess, *Medical Service in Industry and Workmen's Compensation Laws*, rev. ed., Chicago, American College of Surgeons, 1946.

The cost of this service to industry ranges from \$1.75 to \$2.00 per person.

THE ILLINOIS STATE NURSES' ASSOCIATION The Industrial Nurses' Section of the First District of the Illinois State Nurses' Association was organized rather recently and became more active in 1946. Its primary function is the promotion of a high quality of industrial nursing through recommended codes of acceptable standards and practices. The section recently made a study of personnel practices of industrial nurses and is now preparing recommended standards on this subject.

INSURANCE COMPANIES Virtually all industrial plants, except very large ones, carry insurance in connection with the Workmen's Compensation and Occupational Disease Acts. For this reason, the companies which issue this type of insurance have a vital interest in the protection of workers against occupational injuries and diseases. Companies issuing group life, sickness, and hospital expense insurance likewise have a basic interest in keeping insured employees well and on the job. Statistics showing the large proportion of employees protected by these various benefits were presented in Chapter 32.

Several of the larger insurance carriers have industrial hygiene divisions employing industrial physicians, industrial hygiene engineers, and chemists, and maintain laboratory facilities and equipment for making field investigations of occupational health hazards. Several, in fact, have been pioneers in this field. They also have been doing considerable educational work through sound films, pamphlets, posters, motion pictures, and other educational media. Unfortunately, because of wide territories to cover and small staffs, the services rendered have been spread very thinly and often have been limited to industries having excessively hazardous operations or some unfavorable experience and to those making special requests for service.

Several companies primarily interested in general health conservation have instituted departments for this purpose. Through the media of a few physicians and often, a large number of nurses, the insurance companies carry out a program of prevention of illness. The company nurses may visit the insured plants to check and advise on health services and make such inspections and reports as the insurance company physician may direct. The physician issues recom-

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Several companies primarily interested in general health conservation have instituted departments for this purpose. Through the media of a few physicians and often, a large number of nurses, the insurance companies carry out a program of prevention of illness. The company nurses may visit the insured plants to check and advise on health services and make such inspections and reports as the insurance company physician may direct. The physician issues recom-

mended standards for medical and nursing services to insured plants and attempts to demonstrate the value of these services. A few companies also make arrangements with the visiting nurse associations or have their own nurses visit the homes of sick employees in order to minimize the effects of illness.

With a few outstanding exceptions, however, the general health activities of insurance companies in industry have been rather limited and are now in a developmental stage. Indications are that more and more industrial workers will have the benefit of such services. Also, the many insurance carriers providing or recommending plant medical and nursing services to plants interested only in meeting their legal requirements under the compensation laws are recognizing the value of providing more services for health conservation than are required by law.

PRIVATE CONSULTANTS The utilization of private consultants in industrial medicine and industrial hygiene was indicated by several of the larger plants in the survey. Although there are relatively few trained industrial physicians or engineers in this field, a definite need exists for their services by plants requiring assistance in medico-legal matters, plants preferring private consultant services to those available from the official agencies, and plants requiring more extensive services than can be expected justifiably from the official agencies. The services of these few consultants are spread very thinly so far as the over-all industrial health problems in this area are concerned.

THE COUNCIL OF SOCIAL AGENCIES OF CHICAGO This agency is a voluntary membership association or federation of more than 200 tax-supported and voluntary nonprofit health and welfare agencies in metropolitan Chicago. Two activities of the Council of Social Agencies directly concerned with industrial workers are the Social Work-Labor Project and the Health Education in Industry Project.

Social Work-Labor Project.—This project was started in the Council of Social Agencies about 1945 with the aid of the Community Fund of Chicago on a three-year experimental basis. Its primary purpose is twofold: (1) to make welfare services better known to workers and more fully used by those in need of such services and (2) to secure active participation by representatives of labor groups in community planning of health and welfare services.

Representatives of three labor groups, the Chicago Federation of Labor—A. F. of L., the Chicago Industrial Union Council—C.I.O.,

and the Railroad Brotherhoods, are on the full-time staff of the project. Policy development of the project is guided by an advisory committee, the Committee on Organized Labor and Welfare Planning, which includes representatives of management and labor groups in its membership.

From the standpoint of the Council of Social Agencies the project is a tool for the achievement of the primary purpose of social work—service to people. From the point of view of organized labor, it is a means for helping union members obtain adequate health and welfare service and a medium for expressing the interests of union members in community affairs. The program of the project includes neither promotion of union membership nor intervention in questions of collective bargaining or grievance procedures within plants. Nor will the committee and the staff of the project in their work enter directly into questions of legislation or take stands on questions of broad public policy. The Committee on Organized Labor and Welfare Planning may, however, recommend consideration of social legislation to the Board of the Council of Social Agencies or to city-wide labor bodies.

The Social Work-Labor Project has acted in a number of instances as the channel for the planning and the execution of plant surveys on tuberculosis in co-operation with the Tuberculosis Institute of Chicago and Cook County and on venereal disease control in industry in co-operation with the Chicago Health Department.

In a conference with the staff of the project, the representatives of the three large union groups stated that it is unwise for agencies interested in health conservation of industrial workers to work only with management groups. Union officials can aid the program effectively and help to cushion the effect of health surveys, as, for example, in instances where cases of active tuberculosis are uncovered and prolonged sanatorium care is required. Since present laws provide no unemployment compensation for workers unemployed because of sickness, the family income usually stops when the wage earner is forced to give up his job. Plans should be formulated to make some provision for instances like this, instead of placing full dependence upon public relief. More effective follow-up work is required for all these surveys of plants by outside agencies.

The following points were also made in this conference. The plant physician should maintain the traditional doctor-patient relationship with employees instead of, as in many instances, acting primarily

as a company official. His medical records should be confidential and should not be filed as part of general personnel records. There should be co-ordination of the many partial surveys of employees made by numerous agencies interested in the various specialized aspects of industrial health. At present, for example, a blood-testing survey, a chest X-ray survey, a dental survey, and possibly others may be made separately on the same group of employees over a period of several months.

There is too much delay—sometimes many months or even years—in putting into effect recommendations made by factory inspectors in regard to working conditions which the labor organizations consider unhealthful and insanitary.

The Social Work-Labor Project is an effective instrument for enlisting active co-operation and participation of industrial employees in a progressive program of health conservation. Such a program cannot be effective without the intelligent participation of those directly affected, the industrial workers. Recent sections in labor contracts relating to proper health maintenance reflect the growing knowledge and concern of labor groups in this problem.

Health Education in Industry Project.—About 1944 the Health Division of the Council of Social Agencies organized a Health Education Committee, representative of about thirty-five agencies, tax supported and voluntary, which provide programs of public health education and service. Exploration of a Health Education in Industry Project was undertaken at the time of its organization as one of four major projects.

A prominent industrial physician, recommended by the Institute of Medicine of Chicago and the Chicago Medical Society, accepted chairmanship of a small subcommittee. At present, a committee of six is developing plans for the project, two from industry, two from labor, and two from health agencies. Meetings or conferences have been held with representatives of the Chicago Association of Commerce and the health and medical agencies and with personnel directors.

The purposes of the Health Education in Industry Project are: (1) To distribute to working people an authentic and readable publication devoted to health. This will expand many fold the audience reached by health education agencies. (2) To create a single channel through which the several diagnostic services now available from health agencies—blood testing, vision testing, chest X-ray and mouth

X-ray examinations—may be brought to industrial workers. (3) To encourage the formation of and provide leadership for in-plant health committees representative of labor and management. (4) To promote the development of more adequate health services for small industries.

The Social Work-Labor Project has assisted in the promotion of the Health in Industry Project. The plan in principle has been endorsed formally by the following agencies, in addition to the Council of Social Agencies: Chicago Board of Health, Chicago Dental Society, Chicago Medical Society, Cook County Department of Public Health, Illinois Department of Public Health, Council on Industrial Health of the American Medical Association, First District, Industrial Section, of the Illinois State Nurses' Association.

The Illinois Department of Public Health, at the suggestion of the committee, is considering making a staff person available to its Division of Industrial Hygiene to assist this project in organizing and leading in-plant health committees, with representation from labor and management, when management wishes such help. A manual of procedures for such committees would be developed as an early project.

It is thought that the agency developed to carry on this work would concern itself with planning for improved health services for small plants. The direction which this planning might take cannot be predicted.

This broad plan for health education in industry has been dormant in recent months, although two representatives of interested participants were sent to Brooklyn, N. Y., to study the Fort Greene health education plan.⁷ Further efforts are being made to secure sufficient funds to get the project under way and to interest a leading industrialist in assuming chairmanship of the project.

The Social Work-Labor Project has co-operated with the Chicago Industrial Union Council and the Committee on Health Education of the Council of Social Agencies in making a pilot test of the Health Education in Industry Project in one industrial plant, a steel mill having 500 employees. The following services to employees were agreed upon by the management and the local union and are now under way: (1) complete physical examinations, including blood

⁷ J. H. Landes, "Plan of the Fort Greene Industrial Health Committee," *American Journal of Public Health*, XXXV (June, 1945), 602; J. I. Boxer, "The Penny Plan for Health Education," *American Journal of Public Health*, XXXVI (October, 1946), 1,143.

tests of employees by the company physician; (2) complete environmental survey of possible health hazards by the Division of Industrial Hygiene, Illinois Department of Public Health; (3) a dental survey of employees by the same agency; (4) a chest X-ray of each employee by the Municipal Tuberculosis Sanitarium; (5) distribution by the union, with the co-operation of the company, prior to and during the survey, of leaflets and other educational materials to the workers, explaining the value and purpose of the survey.

This experimental beginning of the Health Education in Industry Project should be of considerable interest to all concerned in planning and executing the over-all program and should bring out any possible difficulties in the development of that program. The most important feature, from the viewpoint of labor, is that this program will be undertaken within the plant on a joint labor-management basis. Labor officials are convinced that this method is the only effective way of solving industrial health problems.

THE INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC. This foundation, located in Pittsburgh, provides consultation to its member companies, of which there are a fair number in the Chicago area. It offers industrial hygiene plant surveys, special investigations, and a library and abstract service, and it sponsors research on industrial hygiene problems.

THE VISITING NURSE ASSOCIATION OF CHICAGO The general activities of this association are described in Chapters 34 and 35. Two large insurance companies and a small number of industrial plants pay the association to have its nurses visit the homes of sick industrial employees. To date, these services have been limited to a rather small proportion of the industrial population. Reports from the 1,399 plants, discussed in Chapter 32, indicated that 3.4 percent of employees had visiting nurses' services provided by outside agencies.

THE ILLINOIS SOCIETY FOR THE PREVENTION OF BLINDNESS Personnel and equipment of this agency were available until recently to industries on a demonstration basis for making visual examinations of employee groups and for surveying and advising management on conditions of illumination.

During the time of the demonstration, thirty-five plants with 9,908 employees were surveyed at a cost of one dollar per employee. Of these employees, 49.7 percent were found to be subnormal in visual skills and in need of visual aid for the safe and comfortable per-

formances of their jobs. Thirty-one plants followed the suggestions of the inspecting engineer on safety and lighting and found it to be a workable and effective safety program. Although considerable interest was aroused among industrialists, this experimental survey program was abandoned because the unrest and uncertainties of re-conversion made it too difficult to maintain regular schedules of testing. It was stated that in normal times such a program should be self-supporting.

JOINT COMMITTEE ON OCCUPATIONAL OPHTHALMOLOGY This committee, representing both the American Medical Association and the American Academy of Ophthalmology, has been actively engaged in furthering visual conservation in industry and in developing techniques and methods for this purpose. It initiated the demonstration program of surveys in industry made by the Illinois Society for the Prevention of Blindness and is studying methods for making surveys more effective and generally available to industry. It serves as a clearing house for inquiries on industrial eye problems. If industrial groups request services on these problems, the committee tries to give such services on an individual basis. Its members give courses to industrial nurses on eyesight conservation in industry.

OTHER AGENCIES The Blue Cross Plan for Hospital Care operated by the Hospital Service Corporation of Chicago (affiliated with the Hospital Service Plan Commission of the American Hospital Association) includes among its participants a large proportion of the industrial workers in the Chicago-Cook County area. Many of its educational activities are directed specifically at employees of industrial establishments.

The Tuberculosis Institute of Chicago and Cook County (see Chapter 26).—The Institute has a mobile X-ray unit for tuberculosis case-finding among industrial and other groups, which it operates in Cook County outside Chicago, and it provides another which the Municipal Tuberculosis Sanitarium operates in Chicago. Chest X-rays of many industrial workers are made by these agencies.

The Chicago Chapter of the American Red Cross.—Courses in first aid and accident prevention are sponsored by this Chapter, and it conducts home nursing courses in an effort to train one person in every family in home nursing. Several of the industrial plants visited during the survey were using these services.

The Chicago Association of Commerce.—This association has

taken an active interest in industrial health and has participated in a number of projects with other agencies and committees in the industrial health field.

The National Safety Council.—The council serves as a national clearing house to gather and distribute information about causes of accidents, including occupational diseases, and ways to prevent them. It works through headquarters in Chicago, as well as through regional, state, and local units, to promote a continuous and unified program of accident and injury prevention. It provides limited consultation to members and others. Many of its industrial services pertain to protection of the workers' health.

Still other agencies which provide numerous services and materials for health education that could be utilized to advantage by industry are the Chicago Heart Association, Inc., the Chicago Nutrition Association, the Chicago Society for the Hard of Hearing, the Illinois Association for the Crippled, the Illinois Society for Mental Hygiene, and the Illinois Social Hygiene League.

SUMMARY AND CONCLUSIONS

This survey, based upon information from 1,399 industrial establishments employing 594,445 workers, shows a great deficiency in the provision of health and hygiene services by the great majority of industrial plants in Chicago and Cook County, according to modern standards. As is true generally, the quantity and quality of plant health and hygiene services were found to be closely related to the size of the plant.

Practically no plant with less than 1,000 employees had a full-time physician, and only two plants with less than 100 employees had part-time physicians. Only 29 plants employed full-time physicians and an additional 90 plants employed part-time physicians. About 600 other plants had one or more on-call physicians, but this service was often limited to treatment of injuries and cannot be considered adequate. Half the plants had no arrangement at all for the services of a physician.

The proportion of workers having access to a physician's services is more favorable, however, as the relatively few large plants employ a much larger proportion of workers. In small plants, with 100 workers or fewer, the regular services of physicians were practically nonexistent (0.3 percent), whereas in plants above this size, full-

time services were available to 32.7 percent of employees and part-time services to 54.4 percent.

Only 238 (17 percent) of the reporting plants employed registered nurses, a total of 556, but almost half these nurses were in the 33 largest plants. Twelve other plants employed part-time nurses, with a total of 24 part-time nurses in both groups. About three fourths of the plants had no provision for industrial nursing services. In speaking of employees rather than plants, full-time nursing services were available to 76.8 percent of the employees in the plants with more than 100 employees and to practically none (0.3 percent) in small plants. Part-time nursing services were also practically non-existent (0.3 percent) in small plants. There is a promising field for the promotion of such services.

Services by dentists were provided only in larger plants (more than one hundred employees), to 1.6 percent of the employees on a full-time basis and 5.5 percent on a part-time basis.

The services of industrial hygiene engineers or industrial hygienists were reported to be available on a full-time basis to 3.0 percent of the employees in the larger plants, and on a part-time basis to 2.7 percent. Practically no small plants reported such services. These data clearly show the extent of the need for services from outside agencies for the evaluation and control of occupational health hazards.

All these deficiencies in the availability of plant personnel for health supervision and protection are reflected in the provision of specific health and medical services. In the small plants with 100 employees or fewer the percentage of employees who receive these services is very small, except in the treatment of plant injuries. Treatment of occupational injuries was available to 82 percent of the employees in the small plants, and of minor ailments to 39 percent, usually at a neighborhood physician's office. Less than one tenth of the employees in these small plants were reported to receive any of the other specified services, with the following exceptions: physical examinations for proper placement (24 percent), blood tests (13 percent), and X-ray examinations (11 percent).

In the larger plants, with more than one hundred employees, most of the specified health services were available to a much larger percentage of employees, although there were wide variations in the percentages receiving service in the different types of industry. The

following tabulation lists the services available to more than 40 per cent of the employees in the reporting plants and the percentage who received the specified services.

| <i>Type of Service</i> | <i>Percentage of Employees Covered</i> |
|---|--|
| Treatment of plant injuries | 99 |
| Accident records maintained | 97 |
| Pre-employment or replacement examinations (new employees) | 83 |
| Periodic examinations for proper health supervision | 58 |
| Examinations after an illness | 72 |
| Illness records maintained | 80 |
| Chest X-rays | 53 |
| Blood tests | 61 |
| Eye examinations | 45 |
| Medical advice given after examinations | 69 |
| Food service | 68 |

One third of these employees were reported to have participated in tuberculosis surveys, provided either by the plants or by outside agencies, and one fifth were given dental examinations. Three fourths worked in plants where some effort was made to provide suitable employment for physically handicapped workers. Almost half had the benefit of varying degrees of health education, visiting nurse services for sick employees, and plant health inspections by the plant physician.

Despite the large percentages of workers in the larger plants for whom many of the recommended health services are provided, very substantial numbers of workers in the larger plants do not receive these services, especially those employed in the medium-size plants, with 100 to 1,000 employees. The desirability of providing or obtaining many of these services should be made clear to plant managements by the official industrial hygiene agencies and by other groups interested in the health conservation of workers.

Protection against the cost of sickness and the resultant wage losses is of paramount importance to wage earners in industry. Many types of insurance and of sick benefit plans have been developed and are available to workers in industry, with employer participation varying from 100 percent to none. Plants included in the survey reported group life insurance plans for 56 percent of their employees, group

health insurance or sickness benefits for 50 percent, and group hospital-expense plans for 58 percent. Since the largest percentage of workers covered was reported by the largest plants, the total figures are influenced favorably by this group. Only 8 percent of the workers in the smallest plants, for example, were protected by group health insurance, and as the plants increased in size the percentage rose to 59 percent for workers in plants with more than 2,500 employees. No prepaid medical-care plans were reported, except provision for the cost of medical expenses included in some commercial group insurance policies.

Despite this wide coverage, a very substantial number of workers have no protection against losses from sickness. The co-operation of management and labor groups should be sought in an attempt to further this type of benefit to all workers. Comparison of these industrial health provisions for industrial workers with those of previous surveys show many similarities and a few differences.

The results of visits to 143 representative plants to obtain additional information and to check on the accuracy of the questionnaire method indicate that very few of these plants kept adequate records of sickness absenteeism, and that health educational activities were extremely limited. Although 11 cases of disablement from occupational diseases and 56 cases with no disability had been reported during the past six months, 80 plants had had no industrial hygiene survey of health hazards during the past two and one-half years.

The visits made to 24 very large plants with full-time medical services also revealed a wide range of industrial health services, varying from a fairly complete program to one which was little more than a service for physical examinations and treatment of plant injuries. Lack of personnel was largely responsible for the extreme limitations of service. The majority of the plants, however, provided many of the desirable medical and health services. Health education activities were very limited and there was little study of sickness records to determine causes of sickness absenteeism and methods of minimizing illness. Even in this group of plants, there were many in which a wider spread of health services would be highly desirable.

The checklist of typical operations, prepared to give a rough index of the processes in each plant that may offer a health hazard to workers, indicated the following: The average number of these operations in reporting plants increased rapidly with the size of the plant, ranging from 1 or less per plant in the three smallest groups

(up to 50 employees) to 7.6 in plants with more than 2,500 employees. The variations were considerable between industrial groups, also, ranging from less than 0.2 per plant in clothing and trades to 4 percent in the large iron and steel and nonferrous metals groups, to 5.4 in transportation, and up to 9 per plant in two large public utilities.

Of the 303,251 plant workers covered in the 1939 industrial hygiene survey of Illinois, 184,181, or 60.7 percent, were exposed to specified industrial materials and by-products, and each exposed worker had an average of 2.1 exposures. It was estimated that the total number of exposed workers in the entire industries from which the sample was taken would be about 697,000. The occupational disease experience in Illinois in recent years does not reflect any over-all decrease in the more serious health hazards.

Periodic surveys of all plant operations by well-qualified personnel are essential for controlling unhealthful exposures likely to result in occupational diseases.

Although the mechanical and manufacturing industries account for 85 percent of all compensable occupational diseases in Illinois, it is evident from both the present and the 1939 surveys and the occupational disease experience in recent years that other industries should not be neglected by industrial hygiene agencies and that the management of all kinds of industrial plants should make certain that potentially hazardous operations in their plants are recognized and controlled adequately.

Occupational diseases, to be compensated and reported in Illinois, must result in disability lasting longer than seven days, a permanent impairment, or death. Compensable cases reported to the Industrial Commission of Illinois totaled 1,036 in 1945, 1,144 in 1944, and 867 in 1943. More than 85 percent of these were in manufacturing industries, while 2 to 5 percent each occurred in trades, service industries, and construction. Within the manufacturing group, about two thirds of the cases occurred in those plants producing iron and steel products, machinery, transportation equipment, and nonferrous metals and products. Skin irritants accounted for almost two thirds of the cases, while lead and explosive compounds led the list of industrial poisons. The proportion of these compensable cases occurring within Chicago and Cook County is not known, but it is estimated to be about one half.

Of the 871 compensable cases of occupational diseases "closed"

in 1944, an average of \$211.00 compensation was paid per case. These cases included 10 fatalities, 3 permanent total disabilities, 156 permanent partial disabilities, 4 disfigurements, and 698 temporary disabilities. The average period of disability was 12.9 weeks. Silicosis accounted for 42 percent of the compensation paid, although constituting only 5.9 percent of the closed cases. Of the 568 compensated cases of dermatitis, 132 were definitely attributed to cutting oils. From 1935 through 1944 occupational diseases have accounted for 1.0 to 1.8 percent of all compensated injuries, and for 1.1 to 2.2 percent of all compensation paid.

It is generally recognized and proved by field studies that many cases of occupational disease do not become sufficiently severe or characteristic to be identified, reported, and compensated. The number of cases and compensation costs shown above reflect only a part of the total amount of disability and impaired health caused by industrial health hazards. An increasing awareness of this problem by plant management and industrial physicians is required to uncover and report all cases of occupational disease and to emphasize the prevention of disability among similarly exposed workers. This function of health officials is important. An effective law requiring the reporting of all cases of occupational diseases is needed. Periodic industrial hygiene surveys are, of course, an effective tool and a fundamental procedure for the prevention of occupational diseases.

As elsewhere in the country, the tax-supported agencies have provided leadership in the protection and the promotion of the health of industrial workers, particularly for the very large proportion of industrial plants without an organized health program, which includes practically all the numerous small plants. The Division of Industrial Hygiene of the Illinois Department of Public Health, located in Chicago, has well-trained and equipped personnel who provide scientific fact-finding surveys, technical consultations, and educational services to any plant, group, or person with industrial hygiene problems to solve. Their balanced program includes medical, dental, nursing, engineering, and chemical services, supported by an adequate laboratory and field equipment. The present staff of fourteen professional personnel is being increased. The division also makes available to industry other state health department services, such as the case-finding activities of the Division of Tuberculosis Control.

The Division of Industrial Hygiene is operated as an impartial

fact-finding, nonregulatory service agency, and the results of its investigations are kept confidential.

The Illinois Department of Labor also has an Industrial Hygiene Unit in its Division of Factory Inspection, located in Chicago, which is staffed by a director and six chemists or chemical engineers and supported by an analytical laboratory and field equipment. It is empowered by the Illinois Health and Safety Act to inspect places of employment and to enforce the rules of the Industrial Commission of Illinois which relate to sanitation and ventilation, and the prevention of personal injuries and disease by contact with any poisonous or deleterious materials, dusts, vapors, gases or fumes. It is required to give employers proper notice of any violation of rules made pursuant to Section 4 of the act, and penalties are prescribed for noncompliance after due notice.

Obviously, unless there is a close working agreement between these two state industrial hygiene agencies, both situated in Chicago, where two thirds of the state's industries are located, one offering technical advisory and fact-finding health and hygiene services and the other charged with inspection and enforcement of regulations for health protection, wasteful duplication of effort is certain, and even competition in the evaluation and control of health hazards. This condition exists because co-operative, co-ordinated efforts have been lacking. In recent years both groups have made surveys and conducted field studies involving extensive laboratory work on problems relating to the evaluation and control of occupational health hazards, and both have conducted programs of health education. Neither division has been staffed sufficiently to serve all the tens of thousands of industrial establishments in the state with its own proper functions. Any duplication of effort directly results in further limitation of services.

There is urgent need for a definition of the duties of each group and for co-ordination of efforts by mutual agreement. The labor department group might serve most effectively by visiting, at regular intervals, all those work places which, according to the law, must be inspected in regard to enforcement of regulations. Only such routine tests as are practicable in the field should be made. The health department group is prepared to serve the labor department, as it does other groups, by fact-finding investigations and research and to perform all the advisory and educational services which relate to health conservation in industry. Both groups should have adequate

legal authority, personnel and funds to accomplish their respective functions.

Industrial health and hygiene activities in the city of Chicago government have been extremely limited and are practically nonexistent at present, aside from general health activities, such as tuberculosis and syphilis control. The Chicago Health Department formerly had a Section of Heating, Ventilation, and Industrial Sanitation which performed limited industrial hygiene functions in regard to engineering control of health hazards in connection with its inspections and approval of heating and ventilating equipment and for fee and licensing purposes. This section and its authority for factory inspections were transferred to the Chicago Department of Buildings in January, 1945, along with other inspectional services in an effort to increase the efficiency of all the various types of inspections.

Its activities are now limited largely to approval of plans for ventilating systems in new or remodeled structures, to annual "fee" inspections of all mechanical ventilating equipment as required by the Municipal Code of Chicago (the fee being based on the capacity of the equipment), to inspections of specified industrial plants for licensing purposes as required by Part VII of the code, and to the investigation of complaints with regard to possible health hazards, unsanitary conditions, and public nuisances. The terms "industrial hygiene" and "industrial sanitation" appear to be misnomers when applied to these limited activities in the field of industrial hygiene.

Although no report of recent activities could be obtained, it should be apparent that under present conditions the section in the building department cannot perform adequately the heavy duties connected with the inspection and approval of equipment and the inspections for licensing purposes required by the Municipal Code of Chicago. Still less can it make an appreciable effort toward functioning adequately in the broad field of industrial hygiene. Its authority, functions, and name should be restricted by ordinance and agreement to heating and ventilation inspections and approval for licensing purposes. All authority and functions directly relating to industrial hygiene should be restored to the Chicago Health Department. This agency, in turn, should depend upon the Illinois Department of Public Health for technical industrial hygiene surveys and services until it has an adequate staff and facilities to handle these problems. Close co-operation should be maintained between the city and the state health departments in stimulating the demand

for industrial hygiene services, and in the provision of general health services, such as tuberculosis and syphilis surveys and health education programs.

The Cook County Department of Public Health has had no organized industrial hygiene activities or staff for this purpose, although its general health program has entered this field in numerous instances. Its industrial health problem is considerably smaller than that of Chicago. Until it is in a position to organize an industrial hygiene unit, this department, like the Chicago Health Department, should depend upon the near-by Division of Industrial Hygiene of the Illinois Department of Public Health for all industrial hygiene services and continue to co-operate closely with that group in extending general health services to the industrial population.

Voluntary agencies in Chicago and Cook County can supply many valuable services for the health conservation of industrial workers. Industrial plants should become familiar with these services and should utilize them freely. Official industrial hygiene agencies should promote and help to co-ordinate these services to industry to prevent duplication of efforts.

The combined activities of the industrial health committees of the several medical, industrial hygiene, dental, and nursing societies, together with the Council of Social Agencies of Chicago, with its membership of more than 200 public and nonprofit health and welfare agencies, should make an effective combination for stimulating and promoting all activities pointed toward health conservation of industrial workers.

The Health Education in Industry Project of the Council of Social Agencies appears to be an effective means for bringing a program of health education to industrial workers, especially to the large proportion of workers in plants at present without health services. Its progressive program and its broad sponsorship by leading health and welfare agencies, industrialists, and labor groups should ensure excellent co-operation and progress in making it an outstanding service agency to industry. Its close relations with the Social Work-Labor Project of the Council of Social Agencies will promote active participation by labor groups in the health program. The number and variety of public and voluntary agencies willing to co-operate and participate in this project will provide a large body of valuable services that should be utilized freely.

RECOMMENDATIONS

It is recommended that:

1. The purpose, authority, and functions of the two state agencies concerned with industrial health and safety problems shall be defined clearly either by mutual agreement or by legislation and that sufficient funds and adequate personnel shall be provided to enable these agencies to accomplish their proper objectives.
2. As a logical allocation of functions, the Illinois Department of Public Health shall be responsible for fact-finding studies and the evaluation of conditions affecting the health of the industrial workers; the Illinois Department of Labor might serve most effectively in securing corrections of unsafe or unhealthful conditions through the enforcement of laws and regulations pertaining to these subjects.
3. The Chicago Health Department, the Cook County Department of Public Health, and other local health departments shall depend upon the Illinois Department of Public Health for all industrial hygiene services until the local health departments are able and willing to supply such services adequately and efficiently.
4. The Bureau of Heating, Ventilation, and Industrial Sanitation of the Chicago Department of Buildings shall be restricted by a new ordinance to its proper field, namely, the inspection, testing, and approval of heating and ventilating equipment, and to code enforcement in connection with annual fee inspections and licensing of industrial plants, and that responsibility for functions relating to health shall revert to the Chicago Health Department.
5. Effective legislation shall be enacted to provide for the reporting of all cases of occupational disease in the same manner as communicable diseases would be reported.
6. The health departments and medical and industrial hygiene societies shall continue to stimulate an increasing awareness of industrial health problems among all affected community groups.
7. Every industrial establishment shall have an industrial hygiene survey for the evaluation and control of environmental health hazards by technically qualified personnel. The frequency and extent of these surveys will depend largely upon the nature and the magnitude of environmental health hazards in each plant. Plants not now receiving such assistance should arrange for this service.
8. The value of a much greater use of regularly scheduled services of physicians and nurses in industrial establishments of all kinds and

sizes shall be emphasized by the joint efforts of management, labor, and professional groups. The following basic industrial health program is recommended, to be conducted by properly qualified personnel.

a. A careful pre-employment or preplacement examination of workers for placement at suitable work within the physical and mental capacity of the employee.

b. Periodic examinations every year or two of all employees for proper medical supervision and health maintenance. Employees in hazardous exposures, such as lead or siliceous compounds, should be examined more frequently at regular intervals.

c. Employees returning to work after an illness of more than three days should be examined to be sure they are able to work and are not a hazard to themselves or to others. Employees recovering from communicable diseases should be examined regardless of the duration of the illness.

d. All employees should have an X-ray examination of the chest either as part of the preplacement and periodic physical examinations or as part of a tuberculosis survey, so that cases of active tuberculosis may be uncovered and treated in early, curable stages and before the infection is spread to their families and to co-workers. In plants where tuberculosis surveys are made by public agencies, plans should be made for effective follow-up procedures, including sending plant physicians duplicate reports on films that have aroused suspicion.

e. Blood tests for syphilis should be an integral part of the preplacement and periodic physical examinations. Plants not yet having such a service should request a blood-testing survey from either the city or the county health department. Careful plans should be made for follow-up procedures, and no discrimination should be made against employees with syphilis, providing they take adequate treatment and are not a hazard to themselves or to others. In mass surveys, copies of all doubtful or positive reports should be sent to the plant physician.

f. The physical examination of employees should include an adequate test of visual acuity with relation to the job. Whenever necessary, employees should be urged to obtain corrective lenses from a qualified eye specialist.

g. Employees should be advised about the findings from all medical examinations and urged to see their physicians or dentists con-

cerning defects or diseases that need medical attention. These procedures are very important parts of health conservation.

h. Treatment of minor on-the-job ailments should be provided wherever possible to enable employees to complete the day's work with relative comfort and efficiency. Employees with more serious illnesses should be urged to obtain proper medical attention.

i. Much greater emphasis should be placed upon an active program of health education for industrial workers, with active participation by employees.

j. Visiting nurse services should be arranged for workers with prolonged or serious illnesses so as to be certain that they are receiving sufficient medical care and to assist in the recovery of the patient. Such nurses should not be used as truant officers.

k. The plant physician, full or part time, should acquaint himself, by regular plant inspections, with all materials and processes used in the working environment over which he has supervision, so that he may recommend appropriate protection of employees from conditions actually or potentially harmful and be familiar with all employees and the nature of their work. Conferences should be held with plant officials on plant health and sanitation problems. Consultation should be requested from persons or agencies technically trained in the control of occupational health hazards whenever necessary. The plant physician should be responsible to top management.

l. Plants having medical services should maintain complete illness records to serve as a guide for preventive measures and for proper medical supervision. Individual illness records, as well as records of examinations, should be kept confidentially by the medical department.

m. Education on basic nutritional requirements should be part of every health educational program. So far as possible, industrial establishments should provide facilities for purchasing well-balanced meals for employees who must eat their mid-shift meal at the plant.

n. The provision of dental examinations and advice should be a part of the plant health program. Diagnostic surveys, including dental X-ray examinations, are now available to industries upon request. Large plants should consider the use of part-time dentists to provide at least preventive measures for the control of dental sepsis and infections and their effects upon health.

o. Arrangements should be made for prompt first-aid, emergency, and subsequent medical and surgical care for all industrial injuries

and occupational diseases for the purpose of restoring injured employees to health and earning capacity as soon as possible. This requirement is legal.

p. The various group health insurance coverages, sickness benefit plans, hospital expense plans, and prepayment medical care plans should be considered by employer and employee groups with the aim of obtaining adequate protection for all wage earners against the impact of severe and prolonged illness or injury.

9. Plant industrial nurses shall be supplied with standing orders developed and signed by a physician.

10. Further co-ordination and use of all the valuable industrial health services of the many nonofficial agencies shall be brought about by close co-operation among state, county, and city health departments, the professional societies, and the Health Division of the Council of Social Agencies. Plant medical departments should be encouraged to utilize fully the many sources of material on health education. The Health Education in Industry Project of the Council of Social Agencies should be given a trial to stimulate this program for all plants, especially for the multitude of small plants without medical service. The official industrial hygiene agencies and voluntary groups should work together very closely in making this project an outstanding contribution to health conservation.

11. The activities of official industrial hygiene divisions and public and private health agencies interested in conservation of employees' health shall not be limited unduly to the manufacturing and mechanical industries. Occupational health hazards and the general health problems in other types of employment should receive their share of attention.

12. All agencies concerned with the promotion of medical services and health conservation in industry shall recognize the importance of intelligent and active participation of employees in plant health programs. The channel into plant labor groups provided by the Social Work-Labor Project of the Council of Social Agencies may be utilized for this purpose.

13. The diagnostic surveys for tuberculosis and venereal disease case-finding, for dental needs, and for eyesight conservation should be known and used more generally by industry. More attention is required than was given previously to planning and follow-up work to make sure that the objectives of these surveys are attained. Plant physicians should be active participants in all phases of these surveys and should receive copies of all reports.

PUBLIC HEALTH NURSING

by *Florence H. Callahan, R.N.*

NURSING SERVICES in Chicago and Cook County, one of the largest metropolitan areas in the United States, present a particularly varied and intricate pattern, with widely distributed, greatly divergent, and often unrelated nursing programs. This chapter and the two following chapters describe the situation in public health and industrial nursing. A chapter on hospital nursing is included on pages 1123-1161.

Detailed reports were obtained from 201 public health agencies, boards of education, and business organizations, employing in the aggregate more than 900 public health and industrial nurses. Additional facts and general information were secured from a number of other agencies and individuals interested in the nursing field. The methods¹ employed in gathering the necessary data for the survey were many and varied, the particular procedure selected depending upon the specific objectives set up for the type of nursing concerned. To secure the greatest possible assistance from local nursing groups, tentative schedules were first developed by the survey staff and then reviewed by participating agencies and institutions for practicality and completeness. General schedules, interviews, group conferences, meetings, time and activity studies, individual personnel questionnaires, sample records, reports, and field observations were all used in gathering the data for this survey.

This chapter presents the data gathered for all agencies about the number of nurses employed; personnel practices; salaries; staff education, including the use of manuals of instruction and reference materials and student programs; the academic and professional qualifications of the public health nurses in the area; and the programs of the various agencies.²

¹ See Appendix III for details of method.

² To avoid duplicating discussion of similar data in the description of the various agencies and services, data which related to all agencies have been consolidated and the discussion of the particular agencies and services is limited to those items which relate especially to the particular one under consideration. To bring the information

HISTORY OF PUBLIC HEALTH NURSING IN CHICAGO
AND COOK COUNTY

Public health nursing in Chicago and Cook County, as in many other areas, started as a visiting nurse service to give skilled nursing care to the "sick poor" in the community. The Visiting Nurse Association of Chicago was organized in 1889 by a group of lay women. This agency provided the only organized program of home nursing in the area until the establishment of the Chicago Maternity Center in 1895 and the Visiting Nurse Association of Evanston in 1898.

In 1906 the Visiting Nurse Association of Chicago loaned four nurses to the Board of Education of Chicago for three months to demonstrate the value of nursing in public schools. As a result, in 1908 the Chicago Health Department employed forty school nurses (the first health department nurses), who were placed under the supervision of the Visiting Nurse Association for a two-year period. At the end of that time, their functions were taken over by the health department. In the next few years a number of school systems throughout Cook County followed the Chicago Health Department's lead by employing school nurses. From 1910 to 1918 nursing services were established in Evanston School District 75 (1910), Thornton Township High School (1913), Oak Park School District 97 (1914), Riverside School and Community Nursing Service (1916), New Trier High School (1918), Evanston School District 76 (before 1918), and the Chicago Heights School District 170 (1918).

As the concept of public health nursing expanded and broadened, new organizations employing public health nurses, such as the Infant Welfare Society of Chicago (1910), the Evanston Health Department (1912), the Metropolitan Life Insurance Co. (1914), the Municipal Tuberculosis Sanitarium (1916), and many others were established to meet the essential needs of the time. From 1916 into the 1920's this expansion continued, until gradually the number of agencies increased to form the present complex pattern of services.

NUMBER OF PUBLIC HEALTH NURSES

At the time of the survey 650 public health nurses were employed in the Chicago-Cook County area, 490 in Chicago alone and 160 in the

on public health nursing in the Chicago-Cook County area obtained in the full comprehensive survey within the space limitations of this volume, it has been necessary to omit forms, detailed tables, and other data difficult to include in a printed book. Some copies of the full report are available for study from the District Office of the United States Public Health Service, 610 South Canal Street, Chicago 7, Ill.

remainder of Cook County.³ According to the usually accepted standard that there should be one nurse per 2,000 population, this area should have at least 2,026 public health nurses, 1,698 in Chicago and 333 in Cook County exclusive of Chicago. The figure on page 728 compares graphically the number of nurses employed with the number needed in the Chicago-Cook County area. Table 106 presents statistics for Chicago, Cook County (exclusive of Chicago), and five large cities with more than half a million population. The population per nurse is higher for Chicago than for any of these five cities.

TABLE 106. NUMBER OF PUBLIC HEALTH NURSES EMPLOYED IN FIVE LARGE CITIES IN THE UNITED STATES, CHICAGO, AND COOK COUNTY (EXCLUSIVE OF CHICAGO)

| <i>City and Agency</i> | <i>1940 Population</i> | <i>Number of Nurses</i> | <i>Population per Nurse (In 1,000's)</i> |
|--|----------------------------|---------------------------------|--|
| City I | 1,623,452 | 279 | 5,818 |
| Health department | | 194 ^a | |
| Unofficial agencies | | 85 | |
| City II | 634,536 | 137 | 4,631 |
| Health department | | 108 | |
| Unofficial agencies | | 29 | |
| City III | 1,504,277 | 257 | 5,853 |
| Health department | | 95 | |
| Unofficial agencies | | 29 | |
| Board of Education | | 133 | |
| City IV | 7,454,995 | 1,169 | 6,377 |
| Health department | | 937 | |
| Unofficial agencies | | 232 | |
| City V | 663,091 | 184 | 3,603 |
| Health department | | 130 | |
| Unofficial agencies | | 54 | |
| Chicago | 3,396,808 | 490 | 6,932 |
| Health department | | 217 | |
| Municipal Tuberculosis San. Dispensary | | 116 | |
| Unofficial agencies | | 157 | |
| Cook County (excluding Chicago) | 666,534 | 160 | 4,166 |
| Health departments and other official health services | | 60 | |
| Boards of education | | 41 | |
| Unofficial agencies | | 57 | |
| Community agencies | | 2 | |

^a 387 positions in budget; many nurses still on military leave.

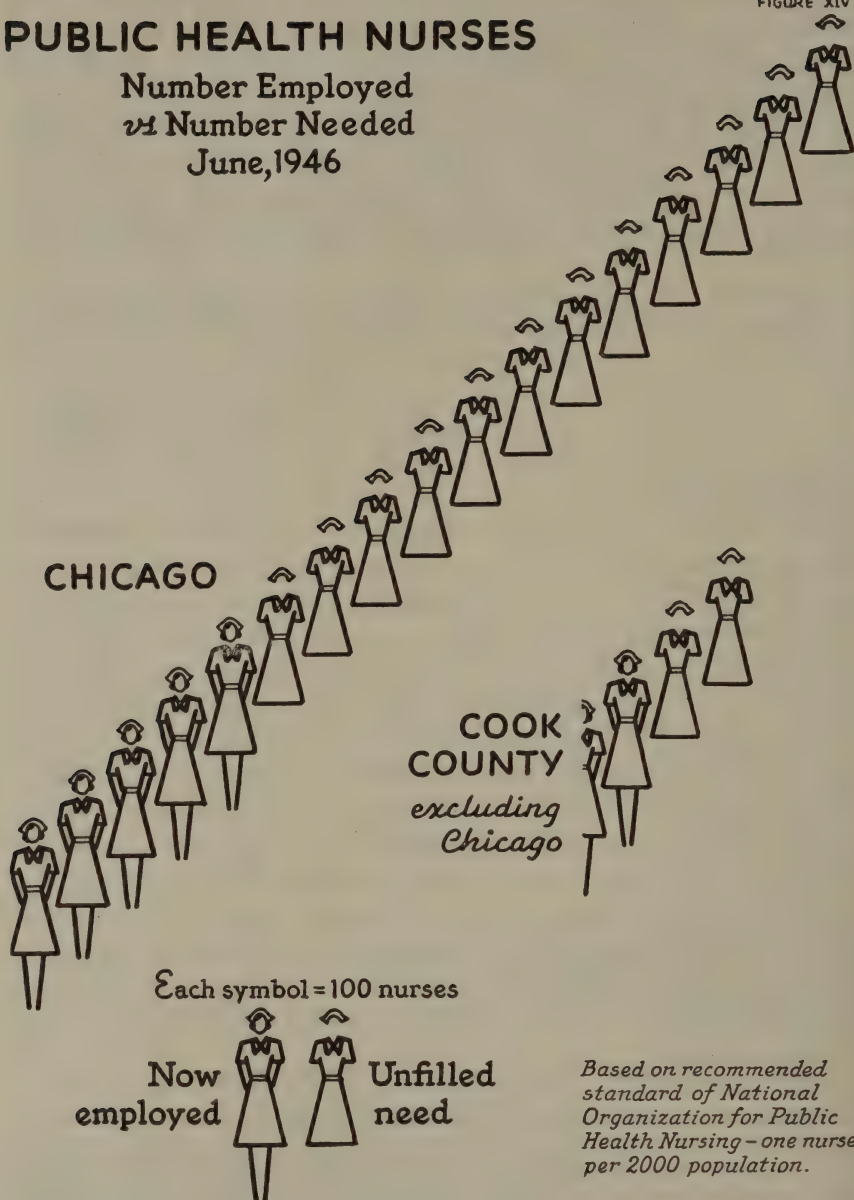
REASONS FOR SHORTAGES Undoubtedly, there are many reasons why Chicago has not attained the recommended goal. In some agencies the deficiency in the number of nurses employed is a matter

^a Statistics on industrial nurses are presented in the section on this field of nursing. Recommendations on industrial nursing are given at the end of Chapter 36.

PUBLIC HEALTH NURSES

Number Employed
vs Number Needed
June, 1946

FIGURE XIV



of budget; in others, one of poor personnel policies in regard to appointment procedures, salary, retirement, vacation, sick leave, and professional advancement.

Public health agencies were hard hit by the second World War, and through these difficult four years struggled heroically to maintain even a semblance of efficient service. However, the war is over, and although nurses are returning from service, shortages still persist. Practically all the large agencies still have a number of vacancies, which they are finding very difficult to fill or to keep filled.

In this review of nursing services, as attention is focused on various conditions in the field, some of the important factors influencing nurses to leave their profession stand out in bold relief. Salaries are low; working conditions are poor in many instances; programs are poorly planned, and there is little or no incentive for public health nurses to take an interest in doing good work; chances for advancement or promotion are almost completely lacking; retirement provisions are either nonexistent or very inadequate; in some cases tenure of office is very uncertain. Under these conditions it is not surprising to find that nurses returning from the armed services sometimes prefer work even in restaurants, where the pay and working hours may be better than that offered in their own profession.

STAFF TURNOVER The statistics indicate that in the Chicago Health Department and the Visiting Nurse Association of Chicago the number of new personnel and the rate of turnover were extremely high, while, on the other hand, nurses employed in the Dispensary Service of the Municipal Tuberculosis Sanitarium seldom resign.⁴ Employment of less than two years was reported for 72 nurses, or 33 percent of the total nursing staff of the Chicago Health Department, and 41 nurses, or approximately 19 percent, had been employed less than one year. The health department records showed that 60 staff nurses resigned in the first eight months of 1946, or an approximate rate of 50 percent yearly turnover among the group of staff nurses. In the Visiting Nurse Association of Chicago, 30 nurses, or 30 percent of its staff, had been with the agency less than one year, and there were 43 resignations in the first eight months of 1946. If this rate continued during the last four months of 1946, the

⁴The tenure of service reported for the Chicago Health Department and the Municipal Tuberculosis Sanitarium represents city service rather than agency service, since in earlier years there was a rather free and easy system of transfer back and forth between the two organizations. This system has been discontinued only within the last few years.

annual turnover must have been approximately 79 percent. However, since 34 percent of the staff nurses of these two agencies had been employed ten years or longer, it seems evident that within the last year or two nurses have been resigning after short periods of service, thus making three and sometimes four resignations from one position within a single year.

At the time the survey was made no member of the Chicago Maternity Center had been with the center as long as one year. Among the other agencies surveyed the percentage of nurses employed less than one year averaged 11.1. Although at the Tuberculosis Institute of Chicago and Cook County the number of staff changes has increased within the last five years and approximately 46 percent of the nurses were employed after 1941, the same percentage (46) had been on the staff ten years or longer, while approximately 18 percent had been with the agency twenty years or longer. Twenty years or more of service was also reported for 78 percent of the nurses in the Dispensary Service of the Municipal Tuberculosis Sanitarium.

The length of service of nurses in any agency reflects to a great extent the personnel policies and working conditions within that agency. Low salaries, absence of opportunity for promotion, heavy case loads, and pressure of work are all factors which may result in resignations. In the Visiting Nurse Association of Chicago the level of nursing salaries is low in comparison with those paid by most of the other local agencies in which nurses are employed—very low in comparison with salaries in other cities. Case loads are very heavy, and the work is strenuous. There is no retirement or pension plan, although the agency is working on this problem. Frequently, as soon as a nurse is fairly well trained she resigns to take another position. Despite other desirable personnel practices in the Visiting Nurse Association of Chicago, not much improvement in its present problem of turnover is likely to occur until the schedule of salaries is much higher and the nursing case load reduced.

Organizations with a very low turnover, such as that found at the Dispensary Service of the Municipal Tuberculosis Sanitarium, however, do not necessarily have ideal working conditions or personnel policies. Circumstances such as permanency of position, uncritical supervisory policies, and personal characteristics of the staff involved are only a few of the factors which might tend toward continuance in service by the personnel of a particular agency.

The problem of personnel turnover is not found in the nursing

field alone. It is harassing business organizations throughout the country at the present time and is a problem commonly associated with the unrest, agitation, and instability following any great war. However, the percentage of turnover in the Chicago Health Department and the Visiting Nurse Association of Chicago appears to be so much higher than in other organizations that further study of their particular situations may be needed.

PERSONNEL POLICIES

The personnel policies of any organization play an important part in the efficiency of that organization. Hours of work, vacation and sick leave with pay, retirement benefits, tenure of office, salary schedules, staff education programs, quality of staff—all contribute to the success or the failure of the nursing program.

Information on personnel practices was returned by forty-eight official and voluntary agencies employing public health nurses, distributed by type as follows: health departments (large), 7; health departments (small), 4; voluntary agencies, 13; municipal or community agencies, 3; boards of education elementary schools, 15; boards of education for high schools, 6.

Information was obtained about days and hours of work, vacation and sick leave with pay, holidays with pay, the requirement of a pre-employment physical examination, the wearing of uniforms, the use of nursing bags, and the provision of pension or retirement plans. Data were also gathered about salary schedules, staff education programs, and the provision of manuals of instruction and reference materials.

DAYS AND HOURS OF WORK Thirty-one of the 48 agencies reported a 5-day week; 17, a week of $5\frac{1}{2}$ days. The number of hours worked per week ranged from 30 in one small health department and two elementary schools to 48 in one voluntary agency. Nurses in 27 agencies worked less than 40 hours weekly; in 10 agencies the total number of hours worked was 40; in 10 other agencies, from 41 to 48. One board of education did not reply to the question. Four of the agencies reporting a work week longer than 40 hours were health departments, 4 were voluntary agencies, and 1 was a community agency. Since 12 of the 21 boards of education reported a schedule of 35 hours or less per week, school nurses worked, on the whole, fewer hours than any other group.

VACATIONS, SICK LEAVE WITH PAY, AND HOLIDAYS Ten of the

health departments granted a 14 day vacation, one large department allowed 30 days. Of the thirteen voluntary agencies, nine allowed 30 days; two, 21 days; and two, 14 days. Two of the municipal or community agencies reported 14 days; one, 30 days. All except three of the boards of education allowed from 6 to 11 weeks on a yearly salary basis, which may be adjusted on either a 12-month or a school-year basis.

Sick leave with pay in accordance with a definite policy is allowed in 35 of 48 agencies, while in 11 it is decided upon an individual basis. One voluntary agency paid no salaries during absence on account of sickness. Of the 35 agencies with a definite policy, 21 allowed from 5 to 12 days; and 14, from 14 to 35 days. One did not specify.

On the whole, voluntary agencies allowed the fewest holidays a year (5 to 7) and boards of education the most (an average allowance of 15 to 20 days yearly). The 4 small health departments and 5 of the large ones allowed 8 to 9 days, while the 2 remaining large departments allowed 10 to 14 days.

PRE-EMPLOYMENT PHYSICAL EXAMINATIONS A physical examination before employment was required by 28 of the 48 agencies. In from 21 to 23 of these agencies an X-ray, a Wassermann or Kahn test, and a urinalysis were included in the examination. Blood counts were taken in 16 agencies.

UNIFORMS AND NURSING BAGS Nurses wore uniforms in all except 1 of the large health departments, 3 of the 4 small health departments, and the 3 municipal or community agencies. Wearing of uniforms was reported by only 7 of the 15 boards of education operating elementary schools. Whether or not uniforms are worn in the field by public health nurses depends to a great extent upon whether or not they give any nursing care and also upon whether it is definitely advantageous for them to be identified as public health nurses.

Use of nursing bags was reported by all except 1 of the large health departments, 2 of the small departments, 11 of the voluntary agencies, all of the municipal or community agencies, and 5 of the elementary school boards of education. None of the high school boards reported the use of a bag.

PENSION OR RETIREMENT PLAN Only 29 of the 48 agencies reported retirement benefits for their staffs. Almost half this group were boards of education (9 elementary school boards and all the 6 high school boards). Five of the large health departments, 1 of the

small departments, 7 of the voluntary agencies, and 1 of the municipal or community agencies also reported that they provided for their nurses in this way. Although nurses who are civil service employees of Chicago and Cook County are eligible for a pension under certain conditions relating to age and service, there is no retirement age and nurses may work as long as they wish and are able to do so. Nurses employed by the Municipal Tuberculosis Sanitarium, for example, may retire at age 55 after twenty years of service. Of the 116 nurses on the staff, 47 are 55 years of age or older, and 91 have been in the city service for 20 years or longer.

SALARIES Salary schedules for staff nurses in the Chicago Cook-County area reported by the forty-eight agencies range from \$1,620 to \$3,900. The median salary was approximately \$2,400. Five school boards, one health department, and the Stockyard Dispensary of the Chicago Lying-in Hospital reported salaries below \$2,000. Nurses employed by 6 high school boards and 1 elementary school board received from \$3,200 to \$3,900, and those employed by 4 other elementary school boards, about \$2,800. Of the 9 other agencies receiving more than the median salary, 4 were elementary school districts. The 5 others were the Winnetka Health Department (\$2,700), the Municipal Tuberculosis Sanitarium (\$2,682), the Chicago Health Department (\$2,616), the Cook County Department of Public Health (\$2,520), and the American Red Cross (\$2,520).

The Infant Welfare Society (Evanston), the Visiting Nurse Association of Evanston, the Oak Park Infant Welfare Society, and the Wilmette Health Center all paid approximately the median salary (\$2,400). Salaries paid by the Chicago Maternity Center (\$2,160), the Infant Welfare Society of Chicago (\$2,160), and the Visiting Nurse Association of Chicago (\$2,040) were all well below the median. Of the 10 health departments from which information on salaries was obtained, 7 paid less than the median salary. Of 22 boards of education, on the other hand, only 7 reported less than median salaries.

In general, the majority of the salaries paid to public health nurses in the Chicago-Cook County area, with the exception of those paid by the school boards, are extremely low and compare unfavorably with salaries paid in other metropolitan areas. In fact, at the present time salaries paid to nonprofessional workers in the agencies are frequently higher than those paid the public health nurses.

Table 107 presents the maximum salaries paid by health depart-

ments in six large cities in the United States, including Chicago, which stands at the bottom of the list. In fact, the \$2,750 paid to staff nurses by the New York City health department (the lowest maximum staff salary reported except in Chicago) is higher than the maximum salary paid to several directors of nurses in the Chicago-Cook County area.

TABLE 107. MAXIMUM SALARY OF PUBLIC HEALTH NURSES EMPLOYED IN HEALTH DEPARTMENTS OF FIVE LARGE CITIES IN THE UNITED STATES

| CITY | NURSE CLASSIFICATION | | | | |
|-------------------------|----------------------|--------------------|--------------------|--------------------|--------------------|
| | Director | Assistant Director | Consultant | Supervisor | Staff |
| San Francisco | \$4,800 | \$3,960 | ... | \$3,480 | \$2,760 |
| Los Angeles | 5,280 | 4,500 | \$4,044 | 3,828 | 3,270 |
| Detroit | 6,269 | 4,209 | 4,209 | 3,519 | 2,967 |
| Washington, D. C. (old) | 8,059 | 5,905 | 4,902 | 4,149 | 3,397 |
| Washington, D. C. (new) | ... | ... | 5,905 ^a | 4,902 ^a | 4,189 ^a |
| New York | 6,850 | 5,350 | 3,850 | 3,850 | 2,750 ^b |
| Chicago | 3,534 | 3,372 | ... | 3,180 | 2,616 |

^a In process of being reclassified. Sub-professional classification in process of change to professional.

^b This includes \$350 yearly, which is given as a "cost of living" bonus.

It is not surprising that health agencies in the Chicago-Cook County area have been harassed and handicapped because nurses remain with them only long enough to secure sufficient training to fit them for other positions which pay higher salaries. These agencies and others throughout the United States must recognize the importance of compensating professional public health nurses with advanced preparation and training in accordance with their preparation and responsibilities. Otherwise, many worth-while young women who might choose nursing as a career will select instead other professional fields in which salaries and personnel conditions are more attractive and the only individuals who elect to become public health nurses will be those who cannot stand the competition in other fields.

STAFF EDUCATION IN CHICAGO AGENCIES The extent to which staff education was a definite part of their programs varied considerably among the agencies. No over-all staff education program is planned or in operation in the *Chicago Health Department*, although staff conferences are held weekly in 16 of the 37 child welfare stations and new nurses are given a two-week orientation period of instruction and observation. New nurses without postgraduate preparation in public health nursing are expected to enroll in courses at

one of the local universities which would make them eligible for state certification in public health nursing, but must make up time lost if classes occur during hours of duty. Occasionally nurses attend outside conferences on agency time.

The *Visiting Nurse Association of Chicago* has a fairly extensive staff education program for both new and old personnel, which was considerably reduced during the war years. Staff conferences for all nurses are held in branch offices every week, and there is a general staff meeting with outside speakers every two months. Supervisors and assistant supervisors meet with the director of nurses once a week. All meetings are held during the office hours of the agency. Nurses are encouraged to attend professional meetings, and some members of the staff attend the various national meetings each year, the association paying all expenses. Scholarships in public health nursing are available to nurses after one year's employment. At the time of the survey sixteen nurses were attending classes while working on a part-time schedule, and three nurses were on leave of absence for advanced study.

The *Infant Welfare Society of Chicago* has an excellent staff-education program to inform nurses about the aims of the society and train them to carry out its nursing program efficiently. The society gives new nurses without basic public health nursing preparation an introductory period of instruction and practice.

It is not recommended, however, that the society continue to train its nurses on the job, since it takes too much time from the program of nursing service and thus increases the overhead cost of visits. Ordinarily nurses should secure their basic public health nursing preparation through recognized university courses of instruction.

Meetings of the administrative staff of the *American Red Cross* are held weekly, and there are several general and special meetings with part-time personnel during the year. Nurses are allowed to attend classes on agency time and are encouraged to attend professional meetings both in and out of Chicago, for which traveling expenses are paid from time to time.

At the *Chicago Maternity Center* staff meetings are held bimonthly and a series of twenty-four lectures is planned for 1946-47 as part of the staff education program. Staff nurses may attend also the weekly meetings for new nurses and interns, at which the methods used in the home delivery service are demonstrated. A nutritionist and a social worker are available for consultation with the nursing staff.

Nurses new to the staff are given instructions and a demonstration of home delivery and are allowed to observe in the clinic and in the field before being assigned to their duties.

The Dispensary Service of the Municipal Tuberculosis Sanitarium operates no real staff education program, nor is one contemplated for the near future, although supervisors hold weekly conferences with the nurses in the various centers and attend a monthly meeting with the medical director at the central office. A series of lectures by physicians is conducted in connection with the nurses' meetings.

STAFF EDUCATION IN COOK COUNTY AGENCIES Some information on staff education was reported by only 10 of the 50 agencies and boards of education in Cook County employing public health nurses. The Cook County Department of Public Health holds bi-monthly staff conferences for nurses in the various district offices, once with the supervisory staff and once with the consultant staff, and in addition a monthly institute on Saturday mornings for the entire staff. Many nurses from other agencies also attend this institute. Supervisors have one supervisory meeting and one administrative meeting at the central office each month, in addition to the staff meetings, and several meet regularly with some of the staff nurses to work on a special manual of instructions.

Nurses are allowed to attend late afternoon classes on agency time and are encouraged and given the time to attend professional meetings. Nurses on the staff of the Tuberculosis Institute of Chicago and Cook County regularly attend the Saturday institutes held by the Cook County Department of Public Health. A staff discussion meeting to take up problems connected with the nursing program is held monthly. The health department institutes also are attended by nurses of the Oak Park Health Department and the Family Welfare Association of Oak Park. The Oak Park Health Department holds nursing staff meetings once or twice a month and allows nurses to attend professional institutes and meetings throughout the year on agency time. The two nurses of the Family Welfare Association hold weekly conferences.

The two nurses employed by the Oak Park and River Forest Infant Welfare Society hold frequent informal conferences and are allowed to attend outside conferences and meetings in the Chicago-Cook County area on agency time.

The Evanston Department of Health holds monthly staff meetings throughout the year and sponsors monthly meetings for all agencies

in Evanston, planned co-operatively by the participating agencies. The Visiting Nurse Association of Evanston has semimonthly staff meetings, with special discussions, demonstrations, and outside speakers. All members of the staff are required to attend two meetings of the Evanston Council of Social Agencies each year. The Infant Welfare Society (Evanston) has monthly staff meetings, and nurses also attend the monthly meetings at the health department. All three agencies permit their nurses to attend university classes and outside professional meetings on agency time. The Evanston Department of Health and the Infant Welfare Society occasionally pay the traveling expenses of a nurse to professional meetings outside Chicago and Cook County.

Nurses employed by Evanston School Districts 75 and 76 and Evanston Township High School District 202 attend the monthly meetings sponsored by the Evanston Department of Health and hold occasional staff meetings. Nurses in districts 75 and 202 are allowed to attend outside professional conferences and meetings on agency time. This policy was reported also by the majority of the other school districts.

MANUALS OF INSTRUCTION AND REFERENCE MATERIALS Only thirteen of the agencies employing public health nurses in Chicago and Cook County reported use of nursing manuals or outlines of nursing techniques and standing orders, and in some agencies they were available for office use only. Twelve agencies reported reference materials, varying from "a substantial library" to a "minimum number" or a "few."

Manuals of instruction.—Nurses in the Chicago Health Department have detailed manuals of instruction in the child welfare stations, but are not provided with a definite manual of rules, regulations, techniques, and procedures for field use. However, a general manual is said to be in process of preparation. The Chicago Maternity Center furnishes each nurse with a manual of standing orders and nursing procedures, and reference manuals outlining clinic procedures are on file at the clinic. The Infant Welfare Society of Chicago also provides manuals of instruction and procedure for use as guides during home visits and clinic nursing service. The *American Red Cross* gives complete manuals covering all phases of the material used to all personnel responsible for teaching. The Municipal Tuberculosis Sanitarium has no nursing manual which is available to the nurses in the field, although an outline of clinic procedures and poli-

cies is provided. At present a manual is being prepared by a staff member who is not a nurse, although she is consulting the nursing supervisors with regard to technical points. The Visiting Nurse Association of Chicago has complete manuals of instruction for both office and field. Every field nurse carries a copy of the field manual in her bag.

Nurses at the Tuberculosis Institute of Chicago and Cook County either carry in the field or keep on reference at the clinics the manual published by the National Organization for Public Health Nursing. A school health committee of staff nurses also has prepared a reference book, approved by the medical director, which includes some techniques and clinic procedures and standing orders. The Cook County Department of Public Health has made exceptionally good provision for comprehensive nursing manuals for use in its various centers, but nurses have only a very brief typewritten outline on field procedures, originally formulated for students and insufficient for routine field work. The Evanston Department of Health and the Visiting Nurse Association of Evanston provide all nurses with a nursing manual, including standing orders. The Infant Welfare Society (Evanston) has standing orders prepared by the director and approved by the medical director and the medical staff, of which complete copies are carried by new nurses and by students and selected portions by the more experienced nurses. The Oak Park Health Department, the Family Welfare Association of Oak Park, and the Oak Park and River Forest Infant Welfare Society keep reference manuals on file in the central office, but none is available for field use. Evanston School District 76 and High School District 202 both have standing orders and outlines of techniques worked out with the approval of physicians. Only two other high school districts and two other elementary school districts reported the use of a manual or standing orders furnished by the agency. Approximately half the twenty-two boards of education included in the study use no written standing orders in the carrying out of the school program.

Reference materials.—The Chicago Health Department has a rather complete library on public health nursing at its central office and a few reference books at each of the thirty-seven stations. The Chicago Maternity Center, the Visiting Nurse Association, and the American Red Cross also have comprehensive reference libraries at their central offices. The Visiting Nurse Association also provides

a number of reference books and several professional journals at each of its thirteen substations. The Municipal Tuberculosis Sanitarium has a large number of reference books on tuberculosis and the professional journals available at its central library, but it furnishes none to its field offices.

The Cook County Department of Public Health has a small library of 75 to 100 books on professional and allied fields in its central office and has ordered 19 reference volumes for each of the district offices. The Evanston Department of Health, the Visiting Nurse Association, and the Infant Welfare Society all have fairly complete reference libraries. The Oak Park Health Department, the Family Welfare Association, and School District No. 97 reported a very few.

STUDENT PROGRAMS IN PUBLIC HEALTH NURSING

Nine agencies reported provision for the training of undergraduate or graduate nurses in public health nursing, three in Chicago, and six in Cook County outside Chicago. In Chicago the nursing division of the Chicago Health Department, the Infant Welfare Society, and the Visiting Nurse Association accept graduate nurse students from the University of Chicago and undergraduate students from schools of nursing for field experience and training. At the health department the field work of the graduate nurses covers a two-week period, and that of the undergraduates, four weeks for students from one nursing school and eight weeks for students from another. A supervising nurse is responsible for co-ordinating the program, which includes specific instruction and opportunities for field and clinic observation.

At the Infant Welfare Society of Chicago graduate students are given 4 weeks of field work, and student nurses from two nursing schools (1 located outside Illinois) are given 6 and 8 weeks, respectively. The society has set up a comprehensive plan of instruction, demonstration, observation, and practice. The Visiting Nurse Association of Chicago also provides a well-outlined and complete program. Graduate students have a 5-week period of training, and undergraduates, 2 months. During 1945 the association provided field work for 71 undergraduate students and 4 graduate students. In addition, 41 graduate nurses from the University of Chicago and from the Physical Therapy Department of the Medical School of Northwestern University made observation visits in the field with staff nurses.

In Cook County the Tuberculosis Institute arranged 2-day obser-

vation periods for orientation in tuberculosis service for 115 undergraduate students from local hospitals and 33 graduate students in public health nursing from the University of Chicago and from Loyola University. During 1945 the nursing division of the Cook County Department of Public Health gave 15 graduate students from Loyola University a 4-month period of field experience and training. The program was planned by the nursing director. Supervisors in the various district offices assisted in classwork and demonstrations and supervised the students' field observation and practice.

The Student Program Council of Evanston, composed of representatives from the Evanston Department of Health, the Infant Welfare Society (Evanston), the Visiting Nurse Association of Evanston, and Loyola University assists in the planning of programs for graduate and undergraduate nurses. This program, under which students are rotated through the three agencies, replaced the separate teaching center sponsored by Loyola University until June, 1945.

Graduate nurses are accepted for a 5-week period at the Evanston Department of Health; students from one hospital school spend two months and from a second, one day. During 1945, 12 graduate nurse students were affiliated with the Infant Welfare Society of Evanston for five weeks each, and 45 undergraduates each visited the agency for a one-day observation period. In 1944-45, 99 undergraduate students spent either a day or a half day apiece at the Visiting Nurse Association of Evanston, and 17 graduate-nurse students spent five and one half days each.

ACADEMIC AND PROFESSIONAL QUALIFICATIONS OF PUBLIC HEALTH NURSES

To be eligible for certification as a public health nurse in Illinois the law requires that a nurse must:

1. Complete either a year's course of study in public health nursing at an approved college or university or complete a four months' course (one semester) of study and have at least one year of experience under the supervision of a certified public health nurse or a supervisor of a large city organization.
2. Be registered in Illinois.
3. Pass an examination in public health nursing given by the Illinois State Board.

At the time this law went into effect, however, "all individuals who are employed as nurses" were "blanketed in" and issued certificates, with no requirements as to training, registration, or other

qualifications. Consequently, there are still a number of women designating themselves "certified public health nurses in Illinois" and working in this field who may not be registered nurses in any state.

The Chicago and Cook County civil service commissions require only registration and public health nursing certification in Illinois as prerequisites to appointment to all types of public health nursing positions, yet not all the nurses now employed under these provisions meet even these qualifications.

At the present time only 18 staff nurses and 2 supervisors in the Chicago Health Department can meet the minimum qualifications recommended by the National Organization for Public Health Nursing (N.O.P.H.N.). In addition, 42 nurses have had one semester of formal work in public health nursing, and 34 have had one or two courses, but less than one semester. Only 6 of the field nurses at the Municipal Tuberculosis Sanitarium meet the qualifications of the N.O.P.H.N. Although basic information on the qualifications of this group was not available, it is understood that very few had taken postgraduate work in public health nursing.

Eight nurses with permanent civil service status in the Dispensary Service of the Municipal Tuberculosis Sanitarium who were certified as public health nurses in Illinois are not registered in Illinois, and only 2 of them have out-of-state registrations. In the Chicago Health Department 2 of 4 certified public health nurses are not registered in any state, and 2 of 12 registered in some other state, but not in Illinois, also have permanent civil service status. Seven nurses in the health department and 11 on the field staff of the sanitarium with permanent civil service status are not certified public health nurses in Illinois or in any other state.

At the Chicago Maternity Center both qualified nursing supervisors had resigned at the time this report was prepared, and the nurses temporarily assigned to fill their positions were inadequately qualified. Although only 10 percent of the staff nurses at the Infant Welfare Society of Chicago and 40 percent of the supervisors had qualifications as high as those recommended by the N.O.P.H.N., all nurses are given very thorough practical instruction and a comprehensive understanding of the society's program. Twelve of the 27 staff nurses of the Tuberculosis Institute of Chicago and Cook County reported one year or more of postgraduate work in this field, and 2 held degrees in public health nursing. Five additional nurses had college degrees in other fields. Five nurses on the staff, however, are

not even high school graduates. The nurses on the staff of the Cook County Department of Public Health are well prepared in comparison with those employed by other agencies in this area: 79 percent of the staff nurses and all the supervisors reported one year or more of formal public health nursing training; degrees were reported by 27 percent of the staff nurses and by 87.5 percent of the supervisors. These percentages are higher than the United States averages for nurses in official rural health agencies.⁵

In the Evanston Health Department the supervisor and one of the five staff nurses have degrees in public health nursing, and a second staff nurse has a degree in another field. The qualifications of the nurses attached to the American Red Cross and to the other agencies in Cook County will be discussed under the sections describing each agency. The following paragraphs summarize the data on the staff nurses and the supervisory group for all the agencies and also present some information on dates of training and ages.

QUALIFICATIONS OF STAFF NURSES Relatively few of the staff nurses in Chicago and Cook County have the minimum qualifications recommended by the National Organization for Public Health Nursing (1940-45), although a considerable number report that they are working toward state certification as public health nurses. Of 429 staff nurses in Chicago, 32 had one year or more of study in public health nursing at a college or university approved by the N.O.P.H.N., and 18 had college degrees in other fields. The extent of their training in public health nursing is as follows:

| | |
|--|----|
| A one-year course of study in public health nursing | 22 |
| Two years of academic work in public health | 3 |
| Three years of academic work in public health | 2 |
| The A.B. degree, with major in public health nursing | 3 |

In Cook County, exclusive of Chicago, 64 of the 132 staff nurses who returned the personnel questionnaires had had the recommended year of study in public health nursing, and an additional 21 held college degrees in other fields. The extent of their training in public health nursing is as follows:

⁵ According to the 1945 tabulation of qualifications of public health nurses prepared by the United States Public Health Service, 31 percent of the staff nurses in official rural agencies and 83 percent of the supervisors had had a year or more of formal public health nursing training, while 10 percent of the staff nurses and 47.2 percent of the supervisors had degrees.

| | |
|---|----|
| A one-year course of study in public health nursing | 40 |
| Two years of academic work in public health | 7 |
| Three years of academic work in public health | 4 |
| Degrees, with major in public health nursing | 13 |

QUALIFICATIONS OF DIRECTORS, CONSULTANTS, SUPERVISORS, AND HEAD NURSES Although relatively few of the supervisory group in Chicago meet the minimum qualifications recommended by the N.O.P.H.N. (1940-45), the percentage for Cook County, exclusive of Chicago, is fairly good. Of 61 Chicago nurses in this group, only 6 had an A.B. degree and at least one-year course of study in public health nursing at a college or a university approved by the N.O.P.H.N. Five additional nurses in this group held college degrees in other fields, but lacked the year of public health nursing study. In Cook County outside of Chicago 10 of the 16 nurses in the supervisory group had college degrees as well as a year of public health nursing study.

DATES OF TRAINING AND AGE OF CHICAGO-COOK COUNTY NURSES Two factors considered in relation to the potential efficiency and adequacy of a nursing staff are the dates at which the majority of the nurses in an agency were graduated from nursing school and the recency of the postgraduate work in public nursing taken by its nurses in connection with the agency's program of staff education. The average age of the nurses in an agency is another significant factor since in public health nursing, as in other fields, the physical ability of workers is appreciably reduced in the older age groups. Field nurses in particular have such active jobs that they must be in excellent physical condition to carry on their responsibilities with maximum efficiency.

Dates of training.—Analysis of the graduation dates of the public health nurses employed in Chicago and Cook County indicate that 343 nurses of the 638 reporting, or 54 percent, had been graduated in 1929 or earlier, and 106, or 17 percent, in 1940 or later. In the Dispensary Service of the Municipal Tuberculosis Sanitarium, however, 106 of the nurses, or 91 percent, had been graduated before 1930, while only 8 nurses, or 7 percent, had completed their nursing school training in 1930 or later. At the Tuberculosis Institute of Chicago and Cook County 23 nurses out of the total staff of 28, or 82 percent, had been graduated before 1930, while 5, or 18 percent,

time of the survey. Present civil service regulations provide only four classifications for health department nursing personnel: director, assistant director, supervisor, and field nurse. No provision is made for staff nurses having special duties to receive salaries commensurate with their responsibilities, as, for example (1) the key nurse, a staff nurse given certain administrative duties, such as planning the field work, assigning the home visits made by the other field nurses, and assisting in the clinic, and (2) the assistant to the supervisor, who assumes the supervisor's duties in her absence and regularly assists in supervision.

The nursing section has developed an excellent system for selecting nurses for promotion. Key nurses are selected from the staff group on the basis of efficiency analyses, assistant supervisors from the key nurse group, and supervisors from among the assistant supervisors. The nursing section is greatly handicapped, however, because, except for the supervisory group, no increase in salary or change in civil service classification can be made for the nurses to whom these increased responsibilities are assigned.

Records and reports.—The nurses' field records, though very abbreviated, are sufficiently complete for the type of nursing program. Daily activity reports, however, contain only the combined figures for the total number of daily visits and are almost meaningless. The need to conserve time is said to be the reason for their brevity.

Nursing program.—The health department nursing program consists of the following activities: an intensive immunization service for infants and preschool children; general health supervision for children under two years of age; intensive follow-up of sick infants under one year of age with special emphasis on hospital care of whooping cough cases in this age group; follow-up of carriers and contacts to cases of diphtheria and surveys of immediate areas surrounding the residence of any case of diphtheria; follow-up of prenatal cases and infants under two years of age who have or are suspected of having gonorrhea or syphilis; follow-up of children under two years of age who are contacts to cases of gonorrhea or syphilis; intensive nursing program for the care of premature infants; inspection of obstetrical and nursery units in hospitals; home supervision of expectant mothers; nursing service in mothers' milk stations; clinical nursing assistance in child welfare, maternal, immunization, and venereal disease clinics; investigation of home conditions of

infants before their discharge from Cook County, Illinois Research, Provident, and other hospitals requesting this service; school nursing supervision of cardiac cases in the Spaulding School for Crippled Children.

Because of the magnitude of the field, the large number of visits that covering the city for all phases of public health nursing would involve, and the small number of nurses available, the health department has limited its nursing activities chiefly to mass visiting on behalf of the immunization and maternal and child health programs, and referrals for medical care. From this group, only the maternal or child health cases are selected for care which are in urgent need of intensive follow-up because of health hazards. This selectivity in directing the energies of the nurses toward factors which might influence the infant and maternal death rates may have assisted in achieving the low rates that Chicago now has. However, huge numbers of families remain who need a great deal of assistance in health matters, not of an emergency nature, but still serious enough to have considerable effect upon the future health of the family members. The general teaching of fundamental health principles is highly important in any public health nursing program and if placed in operation would tend to prevent or to lighten many of the costly ailments or disabling conditions common in the older age groups today.

Even with the limitation of the program to maternal and child welfare, the case load of each nurse is excessively heavy—an average per nurse of 600 to 800 families on her active list. In the most congested districts, the load may be reduced to 190 or 200 families, but in the better residential areas, where cases under the care of private physicians predominate, a nurse may carry as many as 950 families.

In addition to the heavy field load, approximately 75 percent of the staff nurses give clinic service once, twice, or three times a week. With the exception of the key nurses, the entire staff are rotated in the clinic services, so that all nurses will be familiar with the clinic procedure and also will have the opportunity of meeting the patients or families from their districts who are attending the clinic.

It is not surprising, therefore, that the home visits observed by members of the survey staff were hurried and that in the majority of cases the nurses failed to give necessary instructions and demonstrations. In the judgment of members of the survey staff many of the visits made to give immunization instruction could just as well have been made by intelligent nonprofessional workers. At a later date a

sampling of six weeks of work which the health department reported showed that nurses had given 2,057 demonstrations in the clinics and homes during the sampling period. An analysis of the nurses' daily time study reports also revealed that they were giving demonstrations during a limited number of home visits. The administrators of the field nursing service are keenly aware of the desirability of conducting an active program of teaching patients in their homes, but recognize that, from a practical standpoint, such a program is almost impossible with a staff of the size now employed.

This pressure of work has necessitated placing much administrative emphasis on the development of an efficient system for making visits with maximum utilization of nursing time. Under the method inaugurated during the past year, the key nurses arrange visits according to the type of case and geographical location, and schedule routine calls at definite time intervals. Field nurses are expected to make visits in the order of rotation outlined and must explain to the key nurse any deviation from the assigned plan. Each nurse makes approximately 15 to 40 visits daily when in the field full time, and a lesser number on the days when clinic nursing is combined with field work.

For the most part, the key nurses organize and plan the daily field work very efficiently. They arrange routine visits in the neighborhood of the urgent calls, which include sick infants, abnormal prenatal cases, premature infants, special investigations of neglected children, or any other complaint or emergency call concerning the welfare of children or of maternal cases.

Although the system does not exclude initiative and the possibility of family follow-up by individual nurses, the large case loads and the resulting pressure of work on each nurse is so great that it makes these services difficult and perhaps impossible to achieve. Lack of convenient opportunities in the system for nurses to give complete family care and follow-up may result in a total lack of job satisfaction on the part of some of the nursing staff, and is believed to be one of the contributory factors for at least some of the frequent resignations among staff nurses. If with the proposed increase in staff and the expansion of the nursing program the responsibility of planning the field work were shifted gradually to the field staff, it is believed that families would receive more individualized nursing service and that nurses would experience more job satisfaction.

THE DISPENSARY SERVICE OF THE MUNICIPAL TUBERCULOSIS SANITARIUM The 109 staff nurses and 7 supervisors on the field staff of the Municipal Tuberculosis Sanitarium work out from its six dispensaries. The sanitarium nursing service has neither a director of nursing nor any provision for consultant service in either the nursing service or the related fields of nutrition and mental hygiene.

Appointments and length of service.—Nurses are appointed through the Civil Service Commission and are subject to the same rules and regulations as are the health department nurses. However, through a technicality not understood clearly, the nurses of the Municipal Tuberculosis Sanitarium are on a higher salary schedule than the Chicago Health Department nurses. The personnel information kept on each nurse was limited to date of appointment, civil service classification, dates of registration, and certification in Illinois. No analyses of nursing performance are made on an agency-wide basis.

The minimum retirement age for nurses on the staff of the Municipal Tuberculosis Sanitarium is 55, after 20 years of service. Among the 116 nurses on the Dispensary Service staff, 47 are 55 years of age or older, and 91 have been in the service of the city for 20 years or longer. This large group of nurses elect to keep working because the pension is small and retirement is not compulsory. This situation obviously does not contribute to the efficiency of the nursing service.

Nursing program.—Nurses on the staff of the Dispensary Service carry the following types of activity: home nursing visits to cases, contacts, or suspicious cases of tuberculosis and to special cases in the research clinic; school nursing service in 35 public schools; clinic nursing service at regular tuberculosis clinic sessions, in pneumothorax clinics, and in Tice Research Clinic; nursing service in mobile fluorographic unit.

The details of these different programs are described in Chapter 35.

Quality of nursing service.—As would be expected in an organization which so completely lacks nursing guidance and leadership, the nursing program is disorganized and uneconomical. The majority of the supervisory staff are uncritical and do little to improve the quality of the nursing service to patients. The nursing techniques practiced by a large number of the nurses in the field were shocking and unsafe. Relatively few of the supervisors give the field nurses the

assistance and leadership needed to improve the quality of their work, though some individual nurses are much interested in the welfare of their patients and have established some very fine relationships with them.

The great need in this agency for adequate nursing guidance and administrative direction through a nursing director cannot be over-emphasized. With efficient supervision and direction, the nurses on the Dispensary Service staff can make a definite contribution to the tuberculosis nursing program in Chicago.

Need for a generalized service.—There is, however, duplication of service because both sanitarium and health department nurses cover the same areas and at times visit the same homes, each concerned with a specialized program. The two city departments cannot afford to waste nursing time in this way and taxpayers' money should not be used to pay two groups of nurses for the provision of services that could be rendered more efficiently by a single nurse providing a generalized service in a given area. It is also true that families visited by several different nurses, each emphasizing particular phases of the family health problems, are likely to be confused and to do nothing. Sometimes, they accept the advice of the nurse who talks most convincingly, even though her recommendations may not be the most important from the standpoint of the health and welfare of the family as a whole.

For these reasons, principally, it is believed that incorporation of the tuberculosis nursing service into a generalized nursing program covering all phases of family health would result in the provision of much more efficient nursing care of all types to the people of Chicago.

THE CHICAGO MATERNITY CENTER This voluntary agency operates a field and clinic nursing service for the supervision of expectant mothers and provides nursing assistance at time of delivery in the home. Clinic nursing service is rendered in antepartum, cardiac, chest, gynecology, circumcision, and pre-eclampsia-toxemia clinics.

The nursing staff is composed of a director, one clinic supervisor, and ten staff nurses. To facilitate the operation of the 24-hour program, quarters for the nurses are provided in one section of the building which houses the center.

Personnel practices and individual nursing responsibilities of this

agency are not defined clearly. The administrative functions of the director of nurses and of the clinic supervisor are also in need of clarification. The considerable turnover in the nursing staff during the year 1945-46 was pointed out earlier in this chapter.

Nursing records which deal mainly with information about delivery are for the most part detailed and complete. The daily report of nursing activities, however, is very general and gives little specific information about the nursing services given the patients.

The Chicago Maternity Center in common with a great many other public health agencies was compelled to curtail its nursing program during the war years. The obstetrical training program conducted at one time for graduate nurses was discontinued. Mothers' classes were given up, and the amount of home delivery nursing service provided was reduced materially. In 1945 the nurses assisted with only 342 out of 1,835 home deliveries among the center's clients.

Recent suggestions for the resumption of the training course in obstetrical nursing should not be put into effect until there are sufficient well-trained nurses on the staff to supervise this program and until a stable nursing service has been in operation for at least a year. At the time of the survey the nurses on the staff of the Chicago Maternity Center were entirely unqualified to assume responsibility for such a training program. Only one had had as much as a year's preparation in public health nursing at a college or a university.

THE INFANT WELFARE SOCIETY OF CHICAGO The Infant Welfare Society established its nursing service in 1910 and was incorporated as an agency in 1911. The central office staff consists of a superintendent, 5 nurse supervisors, 1 of whom acts as registrar in the main office, 1 psychiatric social worker, who is the mental hygiene supervisor, and 1 nutrition supervisor. The field staff, which is greatly reduced in numbers at the present time, consists of 30 nurses and 2 nutritionists, and operates from 21 stations which cover part of the city.

The thorough inservice training given to nurses employed by the Infant Welfare Society is reflected in the efficiency and the type of work done by its staff, which compares very favorably with that of any agency.

Personnel practices on the whole are excellent although the maximum salaries are less than the median reported for Chicago agencies and lower than those in other cities. The provisions for vacations

with pay, sick leave, insurance, and pensions are adequate. The agency pays half the costs of the required annual health examination and provides outdoor uniforms.

The agency's program.—The Infant Welfare Society of Chicago provides an efficient and complete health education service for the family as a unit, well executed and adapted for each family so as to meet its individual problems. Special emphasis is given to the expectant mother and to the child up to school age. The nursing program consists of generalized home visits to families registered with the agency for instruction, demonstration, or bedside care to anyone in the home in need of such service. Nurses also give instruction on special phases of health, such as tuberculosis, venereal diseases, nutrition, mental hygiene, care of crippled children, immunization, or any other health problem that occurs in a family on the society's register.

With the exception of two or three clinic sessions each week, most of the time of the staff nurses is spent in home visiting. The average case load of the nurse is about 200 families, in which she gives supervision to approximately 275 individuals. This figure varied from day to day as new problems arose regarding individuals in the family not served at the time these statistics were reported.

Nurses of the Infant Welfare Society and of the Chicago Health Department cover the same territory for some of the same services, the understanding being that the health department takes all families not currently registered with the Infant Welfare Society. A checking system has been worked out between the two organizations, and some of the duplications have been eliminated. This cumbersome and time-consuming procedure would be unnecessary if changes in programs were made. The duplication of routes alone by two nurses covering the same territory makes each agency's service more expensive than it need be.

STOCK YARDS DISPENSARY, CHICAGO LYING-IN HOSPITAL The Chicago Lying-in Hospital and its Stock Yards Dispensary are operated by the University of Chicago. The prenatal and postnatal services provided at the dispensary are discussed in the section on pages 757–763.

VISITING NURSE ASSOCIATION OF CHICAGO The pioneer services of this voluntary agency were described at the beginning of this chapter. In addition to its early work in the provision of bedside nursing care to all who needed it, it provided the first physical ther-

apy treatment service for orthopedic cases referred by physicians and clinics. The association has always been a leader in demonstrating the need for specialized types of public health nursing and has frequently loaned nurses to assist in the establishment of such services.

Personnel and organization.—In 1942 the Visiting Nurse Association employed 140 nurses, but during the war years this number was reduced. At the time of the survey there were 81 staff nurses, 20 supervisors, a nursing director, a business manager, a registrar, and the necessary clerical and secretarial personnel.

The city is divided into 100 nursing districts, one nurse being assigned to each district. At the time of the survey the eighty-one staff nurses were carrying the entire load, some nurses being responsible for two districts. The service is administered through thirteen substations distributed throughout the city. Each substation has a supervisor, and under normal conditions an assistant supervisor, who administers and supervises the nursing service. Under an interesting and unique system of sponsorship, the nursing service in some districts is underwritten by a member of the board of directors or by friends of the organization. These districts are named after the sponsors.

The agency has a definite plan for developing a strong supervisory group. This plan provides for promotion from the staff nurse group to assistant supervisor, then later to supervisor. This method is an excellent way of maintaining a well-trained, stable, supervisory staff.

Nursing program.—The Visiting Nurse Association has a very comprehensive program, which includes bedside nursing for all types of patients except those with tuberculosis. Field nursing service is furnished to industrial firms and insurance companies with which the association enters into contract to render certain types of service to employees or beneficiaries. The association also operates three centers for the treatment of orthopedic patients, including postpolio-myelitis cases.

Up to the time of the war the association maintained an excellent nursing program, which consisted of adequate teaching, demonstration, and nursing activities. With the reduction in staff, the educational phases of the program were of necessity drastically curtailed, and the nursing-care services were maintained only with great effort. Often it was necessary for the supervisory personnel to give direct service to patients in order that no request for care be refused. This situation still exists.

Although the number of nurses on the association's staff is entirely inadequate to carry its present tremendous case load, a consistently high level of service has been maintained. During 1945, 246,608 home nursing visits were made to the following types of cases.

| <i>Type of Case</i> | <i>Number of Cases</i> |
|------------------------------------|------------------------|
| Expectant mother | 2,056 |
| Postnatal patient | 35,142 |
| Newborn infant | 32,467 |
| Acute communicable disease | 11,058 |
| Handicapped by disease or accident | 8,773 |
| Orthopedic (postpoliomyelitis) | 11,546 |
| Other | 145,566 |

In addition, 9,639 treatments were given in the three orthopedic treatment centers, of which 3,706 were to patients who had had poliomyelitis.

A particular burden on the Visiting Nurse Association has been the increasing demand for care of the chronically ill. The need for this type of home nursing care is caused partly by the inadequacy of the institutional facilities for this group of persons and partially by the growth in the need for such services which results from the increased number of people in the older age groups. Recently the association has been obliged to reduce the number of visits made to chronically ill patients in order to give at least limited care to all individuals needing home nursing service.

AGENCIES SERVING BOTH CHICAGO AND COOK COUNTY The two agencies which operate jointly in Chicago and Cook County are the Chicago Chapter of the American Red Cross, with a total nursing staff of six, and the Division of Services for Crippled Children, of the University of Illinois, with two consultants. The activities of the consultants in the crippled children's service are discussed on page 811.

THE AMERICAN RED CROSS (CHICAGO CHAPTER) The nursing staff of the Chicago Chapter of the American Red Cross consists of the four nurses in the Home Nursing Section, the director, assistant director, supervisor, and field representative, and two clinic nurses in the Industrial and First Aid Section. In addition, the Home Nursing Section has twelve part-time and several volunteer nurse instructors who teach classes in home hygiene and care of the sick in high schools, community centers, and colleges.

Three of the four members of the Home Nursing Section are well qualified by education and experience for the particular responsibilities which have been given them. Two have college degrees, and one lacks only one quarter's credits of meeting requirements, with a major in public health nursing. The part-time teaching staff of the Home Nursing Section, under the guidance of the supervisory group, has reached a high degree of skill in the techniques of teaching this particular subject matter and, for the most part, are teaching effectively. The full-time personnel carry on a teaching, as well as a supervisory program, since they are responsible for the classes scheduled throughout the area. The supervisory activities during the past year covered the auditing of 144 classes (including a written report on each and a discussion of each report with the nurse concerned) and an unknown number of demonstrations and supervisory conferences.

The activities of the Home Nursing Section for 1945 included 3 series of prenatal classes for war brides, 27 group conferences with mothers, 26 series of classes for nurses in order to prepare them as instructors in home nursing classes, the planning and supervision of 2 institutes in other areas, the giving of a number of radio talks, the furnishing of speakers for approximately one hundred talks on home nursing, and the giving of 293 series of classes on home nursing and care of the sick at which the attendance was 6,293 individuals. The time sheets of the nurses showed that many of these latter classes were held in schools where they were part of a larger unit sponsored by the high school or college, such as home management, home economics, science, health education, or physical education. These classes are always elected for credit.

Meetings of the administrative staff are held weekly. Several general and special meetings with the part-time personnel are held throughout the year.

NURSING IN SPECIAL FIELDS

by *Florence H. Callahan, R.N.*

VARIOUS CHAPTERS in this volume have described activities in Chicago in a number of special fields of public health. The nursing services in these fields will be described in the following sections. There is also a brief section on the findings of a special study of the allocation of nursing time in relation to nursing activities.

COMMUNICABLE DISEASE CONTROL NURSING

The services of the Chicago Health Department nurses are an important factor in the program for the control and prevention of communicable diseases. Many home nursing visits are made by the nurses of the Visiting Nurse Association of Chicago, and the Infant Welfare Society of Chicago participates by providing quarters for immunization clinics in its stations. These clinics are staffed and operated by health department personnel. Nurses of the Infant Welfare Society recommend immunization for all children in the families on their rolls.

The public health nurses of the Chicago Health Department are very active in the immunization program against smallpox, diphtheria, and whooping cough. Of the 352,451 home visits made by the nurses in 1945, approximately 145,158, or 41.2 percent, were made in the interests of immunization.

Health department nurses assist in special immunization clinics, as well as with immunizations in the regular infant and preschool clinics, throughout the year. In 1945, 12,385 nurse-clinic periods¹ were spent in immunization clinics, in comparison with 20,195 nurse-clinic periods for all other types of clinics² staffed by the public health nursing group of the health department.

In the immunization clinics, as in the home, little teaching is done, and much of the nurses' time is spent in activities connected with

¹ A nurse clinic period represents the service of one nurse for one clinic period.

² Exclusive of the services of nurses assigned to the Chicago Intensive Treatment Center.

the actual operation of the clinic itself, not in instructing the parent. There was little or no utilization of opportunities for teaching the care of the vaccinated arm, although printed instructions are provided by the health department for distribution. The clinic activity record, made out for the survey by nurses in the immunization clinics, indicated that many nonnursing activities were checked that might well have been performed by nonprofessional personnel.

The nursing program for actual control of cases of communicable disease and contacts is rather limited, and nursing visits are restricted to calls upon diphtheria cases and carriers and to cases of communicable disease in children under one year of age. All other activities in the control program are carried by the quarantine officers in the health department. In 1945 health department nurses made home visits to 34 diphtheria cases, 305 carriers, and 503 infants under one year of age with whooping cough. Each type of case is given very intensive nursing supervision, and the need for hospitalizing cases of whooping cough under one year of age is emphasized. The nursing section of the health department estimated that at least 2,690 visits—perhaps more—were made in 1945.

The Visiting Nurse Association reported 11,058 bedside care visits to cases of communicable disease for this same period. Thus, a total of 13,748 nursing visits were made by nurses from the two agencies to the 17,214 cases of communicable disease, including chickenpox and mumps, reported provisionally for Chicago by the Illinois Department of Public Health for the year 1945.

According to accepted standards, approximately 24,028 nursing visits should have been made to safeguard this aspect of the communicable disease control program.

MATERNAL, INFANT, AND PRESCHOOL PROGRAMS

The field nursing services in maternal, infant, and preschool programs will be described separately. Discussion of the clinic services will be combined for all three programs.

MATERNAL FIELD NURSING SERVICE The public health nursing activities in Chicago's maternal health program are provided by six agencies: the Chicago Maternity Center, the Visiting Nurse Association of Chicago, the Chicago Health Department (Infant Welfare Stations), the Stock Yards Dispensary of the Chicago Lying-in Hospital, and, to a very limited extent, the Municipal Tuberculosis Sanitarium. With the exception of the Infant Welfare Society, the nurs-

ing service covers nursing care and supervision during pregnancy and delivery and care of the mother and newborn infant after delivery. The duplication in the field nursing services provided by the various health agencies is particularly evident in the maternal health program. The present pattern makes it possible for the same home to receive service simultaneously from nurses of the Infant Welfare Society, the Chicago Health Department, and the Municipal Tuberculosis Sanitarium.

In general, the effectiveness of a maternal health program will depend in large measure upon the quality of the field nursing service provided. Observations of the public health nurses from different agencies during their visits in patients' homes by representatives of the Chicago-Cook County Health Survey indicate that some agencies are rendering excellent service while others are performing at a level far from satisfactory from the standpoint of nursing service. Chicago Maternity Center nurses appeared to be using good techniques and to be following the routine outline of procedure set up by their agency. Those from the Visiting Nurse Association, although pressed for time, gave excellent bedside care and had very good relationships with their patients; at the time of the observer's visit, however, the amount of teaching or demonstration in the home was somewhat limited.

The visits by the Chicago Health Department nurses observed by the health survey representatives were brief, and patients were given little instruction; opportunities for demonstration were not used fully, and in some instances questions raised by patients were unanswered or were answered inadequately. In the family service provided by the nurses from the Infant Welfare Society excellent nursing instruction was given during the visits observed, supplemented by demonstration when the situation permitted. Methods of teaching appeared adequate, and families seemed to be making an effort to follow instructions.

The total volume of nursing service for expectant mothers, exclusive of those hospitalized, but not living in Chicago, is difficult to estimate. Undoubtedly, private physicians and hospital clinics supervise a large number, some of whom may be receiving nursing supervision also, but no figures regarding their care are available. The records of public health nurses in the six agencies indicate, however, the extent of the maternity field nursing provided. During 1945

these six agencies reported a total of 84,894 visits to prenatal and postnatal patients. Since nearly 95 percent of the births in Chicago are in hospitals, the need for nursing assistance at the time of delivery is not a major problem. Estimates based on accepted standards,³ however, indicate that, in a city with Chicago's low maternal death rate (1.9 per 1,000 live births), 30 percent of the maternity patients should receive field nursing service before and after delivery, with an average of four antepartum and three postpartum visits each. Had this standard been reached, approximately 124,600 field nursing visits would have been made during the maternity cycle to 17,803 of the 59,343 women delivered in Chicago in 1945. Since only 84,894 visits actually were made, it is evident that the amount of maternity field nursing now provided in Chicago does not meet community needs.

Although exact information is lacking, professional workers closest to the situation generally agree that much more emphasis needs to be given to locating expectant mothers and giving them prenatal care as early in pregnancy as possible. The number now delivered without previous medical supervision and the relatively late stage of pregnancy at which some women register for prenatal care bear out this conclusion. The six public health agencies should make every effort to reduce to the minimum all possibilities for duplication and to plan for complete co-ordination of their nursing services.

INFANT AND PRESCHOOL FIELD NURSING SERVICE Three agencies, the Visiting Nurse Association of Chicago, the Infant Welfare Society of Chicago, and the Chicago Health Department, provide infant and preschool field nursing services. The Visiting Nurse Association carries on a bedside nursing care program for infants and preschool children including the special care of post-poliomyelitis cases in the home for the entire city of Chicago. During 1945 the nurses in this agency made 32,467 nursing visits to newborn babies and 11,546 visits to post-poliomyelitis cases. On the visits observed by members of the survey staff, the nurses for the most part were very skillful in giving the daily care, treatments, and dressings necessary. Despite their heavy case loads, they gave careful, unhurried, and complete bedside nursing care, and a limited amount of demonstration or instruction.

During 1945 nurses of the Infant Welfare Society made 23,169

³ Ira V. Hiscock, *Community Health Organization*, New York, the Commonwealth Fund, 1939, pp. 126, 179.

nursing visits to infants and 33,036 visits to preschool children. All the field service observed was on a consistently high level of performance, and the majority of visits were well arranged and had been planned in advance, usually at the time of the patient's clinic visit. Major emphasis in the nursing program was on feeding, nutrition, mental hygiene, establishment of desirable health habits, and regular medical supervision. Pertinent and suitable instruction or demonstration was given. Although the plan, content, and method of instruction were excellent, it seemed to the observer that perhaps the teaching might prove more effective if more opportunity were afforded the mother to express her interest of felt need and to reveal her own attitudes regarding child health and family relationships.

During 1945 Chicago Health Department nurses made 5,049 home investigations before the discharge of babies from the Cook County, Illinois Research, and Provident hospitals and from other hospitals which had requested this service. Home visits for purposes of immunization instruction were made to every baby born in Chicago or born outside Chicago to a mother living in Chicago. The health department nurses made 145,158 home visits during 1945 for this purpose and also 122,984 visits to infants and children under two for other reasons. Infants are followed until the necessary inoculations have been completed. After the initial visit, all infants under the care of private physicians are visited in the third, tenth, and twelfth months to urge continued medical supervision, inquire whether or not the immunizations have been completed, and, if not, to urge parents to have this service performed. Monthly, or more frequent, visits are made to infants not under the care of a physician, and there is intensive follow-up of all sick infants, premature or immature infants, and those in homes in which conditions are such as to be a potential danger to the infant. The major emphasis is on children under one year of age. Little nursing supervision is given to children over one, and practically none to those over two.

In a program as extensive as this one, with a staff of only 200 nurses to cover all phases of the department's work, visits of necessity must be brief. During the observation by members of the survey staff, a single nurse made from 3 to 29 visits during a two-and-a-half to three-hour period, with an average of 13 visits for the half day. The majority of home visits averaged 5 to 10 minutes in length, some being as short as 2 minutes, and one, in which the situation was diffi-

cult, as long as 90 minutes. Approximately 80 percent of the visits observed were to infants under one year, 7 percent to preschool children, 7 percent to prenatal cases, and 6 percent to patients of various ages.

In the majority of instances the nurses observed used very good methods of approach in the homes. They were courteous, had a friendly attitude which inspired confidence, and appeared to have a genuine interest in the welfare of their patients. As in the maternal field nursing service, visits were hurried, and questions regarding items other than immunization were left partially or wholly unanswered, the recommendation being made that the mother ask the physician in the clinic. The nurse's advice consisted mostly of referral for immunization and for medical supervision and seldom included the reasons for either. The instructions given concerning immunization, however, were up to date, accurate, simple, and understandable.

Instruction and/or demonstration regarding nutrition, child care, the establishment of desirable health habits, and many other points ordinarily included in a well-rounded program of public health nursing were of necessity omitted from most of the visits. While the nurses are expected to give this type of instruction, it is impossible to do so under the present program and case load. However, the visits to problem cases observed were excellent, and adequate teaching and demonstration procedures were utilized by the nurse.

An appreciable number of public health nursing visits on behalf of immunization could well have been made by intelligent, well-trained, nonprofessional workers rather than by nurses insofar as the content of the visits were concerned. This statement does not imply, however, that public health nurses should not make visits for the purpose of urging immunization. On the contrary, it is believed that this reason for the visit can be utilized as an effective method of gaining entree into the home and provides opportunity for giving additional instruction or demonstration regarding child care, general health, and disease prevention and control. Instruction on immunization would then become part of such teaching instead of the specialized service it now is.

Six health department nurses are assigned to the hospital unit for the purpose of visiting maternity divisions of hospitals throughout Chicago and assisting them in maintaining the standards established by the Cook County Maternal Welfare Committee for the obstetrical

and nursery departments of hospitals. Much emphasis is placed upon correct techniques, especially in relation to the nursing care of infants, and also upon the necessity for employing adequate, well-qualified personnel. The program for this service is well outlined and well executed. The nurse observed by a representative of the Chicago-Cook County Health Survey was thorough, specific, and exacting. In the opinion of members of the hospital unit and of the health department, this service has contributed greatly to improving hospital nursing policies and care of mothers and infants and probably also to the reduction in neonatal deaths. The nurses in the hospital unit supervise 59 hospitals and inspect 154 day nurseries in Chicago. They also inspect 25 convalescent homes and any home which is caring for more than three children not belonging to the family group.

As far as quantity is concerned, the nursing services for infants in Chicago appear to be excellent. During 1945 the Visiting Nurse Association and the Infant Welfare Society made a total of 55,636 nursing visits, and the health department nurses, 122,894 visits, principally to infants under one year of age. A sampling of health department nursing visits revealed that approximately 90 percent were made to this age group. Since Chicago's average infant mortality rate over the four-year period 1941-45 was 28.8 per 1,000 live births, recommended standards indicate that approximately 30 percent of the 59,355 infants born in Chicago during 1945 should have been under field nursing supervision, and an average of four visits made to each. On this basis 71,208 nursing visits should have been made to this group. The most conservative estimates indicate that nurses from the various agencies are making twice this number of visits. The inadequacy or lack of teaching content of many of the field visits observed by members of the Chicago-Cook County Health Survey staff lead to the conclusion that much of this visiting may be of doubtful value.

PRESCHOOL NURSING SERVICE At least 3 home nursing visits to 25 percent of the preschool population are recommended in order to provide adequate nursing service to this group.⁴ Estimates based on the 172,197 preschool population of Chicago indicate that at least 129,147 nursing visits should have been made. Actually, however, only 33,036 were reported, plus the small number included in the

⁴ *Ibid.*, pp. 135-136.

totals of infant care visits made by the health department nurses. Obviously, the amount of nursing service in this field is entirely inadequate to meet community needs.⁵

CLINIC NURSING SERVICE Clinic nursing service in Chicago is rendered by five of the six agencies responsible for maternity field service: the Chicago Maternity Center, the Chicago Health Department, the Infant Welfare Society of Chicago, the Stock Yards Dispensary of the Chicago Lying-in Hospital, and, to a limited extent, the Municipal Tuberculosis Sanitarium. Observations made by members of the Chicago-Cook County Health Survey staff indicate an apparently efficient nursing service in some clinics and need for obvious adjustments in others. At the Chicago Maternity Center, clinic nursing service was fairly adequate and there was good use of posters, displays, pamphlets, and a moderate amount of teaching activity. The opportunities for teaching, however, were not utilized fully.

The service of the Infant Welfare Society appeared to be efficient and well organized, and opportunities for teaching were well utilized. Posters, displays, and pamphlets were used to advantage, and conferences were held with patients often before and always after the visit to the doctor. Neither group conferences nor use of films were observed.

The clinic nursing service of the Chicago Health Department is handicapped by the large and increasing number of patients who attend the clinics. The mere mechanics of operation, which include assisting the physician to take blood pressure and give inoculations, necessarily take up a large percentage of the nurses' time. There were various indications of the inclusion of some organized teaching in the program of a few of the clinics visited. In the majority of the clinic services observed, however, the educational and teaching program of the nurses was but a minor part of their clinic activities. Although patients often see the nurse after leaving the doctor, these conferences are not always used to the best advantage in relation to the giving of urgently needed instruction. In many instances the nurses have time only to give an appointment for the next clinic visit. Sometimes the field nurses appeared over anxious to complete their clinic duties for the day in order to make their scheduled number of home visits.

⁵ In some areas many more visits may be needed, and in others fewer would be required.

Posters were used in practically all the clinics visited, although not always displayed to best advantage. Pamphlets were freely available and were distributed by nurses in the maternal clinics, but not in all the child welfare clinics observed by health survey representatives.

The only organized group instruction in maternity clinics in the area was observed at the Stock Yards Dispensary of the Chicago Lying-in Hospital. These lessons appeared to be well organized. Mothers and expectant mothers participated in the demonstrations and seemed interested. According to the clinic report, the follow-up of the abnormal cases having albuminuria, symptoms of beginning toxemia, and the like presents a real problem, since as soon as these conditions are discovered the case is transferred to the main hospital clinic, which lacks field follow-up facilities.

The detailed findings of the activity study indicate that the nursing service in all maternal and child health clinics in Chicago includes a great many activities that could be performed by non-professional personnel.

ORTHOPEDIC NURSING Three orthopedic treatment centers are operated by the Visiting Nurse Association. Here nurses trained in physiotherapy give treatments and manipulations to orthopedic cases referred by private physicians or by clinics. During 1945 free, part-pay, and full-pay patients made 9,639 visits to these centers. All treatments are given under the specific orders of the physician referring the case.

SCHOOL NURSING SERVICE

School nursing in Chicago is limited to a part-time service in the physical improvement rooms of 31 public schools, a combination of full and part-time service in the 4 schools for crippled children, which was provided by nurses from the Dispensary Service of the Municipal Tuberculosis Sanitarium, and a full-time nursing service by health department nurses for children with cardiac conditions in the Spalding School for Crippled Children. Except for these specialized services, there is no public health nursing service for the 434,000 elementary school children enrolled in the 700 public and parochial schools of Chicago.

During the two-week activity and time study conducted by the Chicago-Cook County Health Survey, 109 visits to schools⁶ were recorded by the specialized tuberculosis nurses, and 20 by health de-

⁶ A visit to a school may extend over any length of time during the same school day.

partment nurses. The following short résumé of some of the activities recorded indicates the types of work done.

| <i>Activities for Groups</i> | <i>Groups</i> |
|--|---------------|
| Weighing and measuring | 145 |
| Testing vision | 32 |
| Physical inspection | 143 |
| Dental inspection | 154 |
| <i>Other Types of Activity</i> | <i>Visits</i> |
| Assisting physician or dentist with examinations | 52 |
| Sanitary inspection of schools | 12 |
| Cleaning clinic room or equipment | 43 |
| Checking or ordering supplies or equipment | 75 |
| Filing or pulling records | 64 |
| Checking absentee records | 77 |
| <i>Inspections</i> | <i>Rooms</i> |
| Light and ventilation | 27 |
| Communicable diseases in children | 53 |
| Morning inspection | 119 |
| <i>Miscellaneous Activities</i> | <i>Times</i> |
| Transporting supplies or equipment | 23 |
| Transporting pupils | 28 |

Some of the items are included as a matter of information on nursing activities and some to illustrate the general contention that many of the activities of the public health nurses in the schools might be done by clerical workers, teachers, janitors, housekeepers, and in some instances by upper-grade pupils.

The relationships observed by the visiting survey staff between nurse and principal, teacher, pupil, or parent were excellent, although in several schools in which physical improvement rooms were located the nurse had not sold herself or the program sufficiently well for the principal to remember her name. Records were adequate, neat, and up to date, and all important data were recorded in proper sequence. Especially complete records were kept in the services for the crippled children and for those with cardiac conditions. Very few posters were seen in any of the health rooms, and very little health teaching was observed, except in the cardiac and crippled children's services. There was no uniform policy with regard to home visiting.

TUBERCULOSIS NURSING SERVICE

The Municipal Tuberculosis Sanitarium is for the most part responsible for the tuberculosis nursing program in Chicago through its sanitarium, dispensary, and school and home nursing services. In addition, the public health nurses of the Infant Welfare Society of Chicago give some instruction about this disease to tuberculous persons or contacts of tuberculous cases in families under their care.

HOME VISITING SERVICE The public health nurses of the Municipal Tuberculosis Sanitarium visit active cases of pulmonary tuberculosis every month; suspected cases, persons under observation, and pneumothorax cases, every three months; arrested cases, every six months. More frequent visits are made when necessary. In addition, a large number of visits are made for the purpose of leaving or collecting sputum bottles or reminding contacts of tuberculous persons to report at the clinic for examination, and a limited number for bedside nursing care and the changing of dressings. Emergency cases are usually visited immediately, and new cases within a week.

Five special nurses from the Tice Clinic also make home visits. These nurses operate a special service within a special service, each nurse being responsible for making certain types of visit on a city-wide basis. The different types of visit made by the Tice Clinic nurses are for the following purposes: to secure consent slips for infants' vaccination against tuberculosis from prenatal patients; to check on delinquent prenatal clinic patients; to give regular health supervision of children vaccinated against tuberculosis, with special emphasis in homes where the tuberculosis case is present; to locate lost patients; to inspect foster homes; to transport infants to foster homes or to hospitals; to refer child or adult to the Tice Clinic for vaccination against tuberculosis.

The specialized public health nurses carrying on the field nursing program in tuberculosis have, to all appearances, an extremely heavy case load, from 200 to 660 families apiece, to whom they are expected to make home visits. The number of visits by the various nurses observed ranged from 4 to 16 for a half-day period, the average for the group being a little more than 9 home visits for that period of time.

The number of home nursing visits made in Chicago in 1945 in connection with the tuberculosis program totaled 157,396, which more than meets the minimum standard of 30 visits per death listed

by Dr. Hiscock.⁷ This yearly total of visits does not include those made by the nurses of the Infant Welfare Society, who recorded their services by age groupings rather than by the special services rendered. Although by these standards the tuberculosis nursing program is providing an unusual amount of service, analyses of what actually occurs during nursing visits showed that the reverse was true.

Nurse members of the Chicago-Cook County Health Survey staff observed 25 nurses and approximately 230 home visits. Apparently a great many of the homes visited had been under supervision for some length of time. On the whole, relationships between the nurse and the patient or contract were very good. In some instances the rapport between nurse and patient was on an extremely high level. Only two instances were observed in which the nurse showed lack of courtesy or was overbearing in her attitude toward a family. The purpose of the majority of the visits was either the collection or the leaving of sputum bottles or reminding contacts of tuberculous persons to report to the clinic for examination.

Nurses usually arranged their visits so as to save time and seemed to have a keen interest in the welfare of the patients in general. A great many of the nurses, however, appeared to need general guidance and assistance in the techniques of carrying out more effectively those activities in the homes which would best promote the health and active welfare of the patients under their supervision.

The hurry and the stereotyped type of visit observed during many of the health department maternal and child health visits were observed during visits made by the Municipal Tuberculosis Sanitarium nurses also. Neglected opportunities for needed teaching were observed in 90 different visits, and in at least 28 instances some type of demonstration to amplify or to illustrate the nurse's instruction could have been used to advantage. Only two of the nurses observed made use of demonstrations. In a great number of visits the nursing content seemed inadequate. Nurses seemed too pressed for time to explain why sputum specimens should be secured and why the contacts of tuberculous persons should be examined regularly.

Although a number of nurses made very fine home visits, there was no over-all technique of making visits, nor was there any definite routine followed for each special type of case. Some nurses carried nursing bags, and some did not; some carried only thermometers. When bags were carried, only rarely were they well equipped, and a

⁷ Hiscock, *Community Health Organization*, p. 115.

proper bag technique which would protect them from contamination in the home was seldom used. The technique in the homes was for the most part shocking, inasmuch as nurses were violating the very precepts which they were attempting to teach the patient.

CLINIC NURSING SERVICE The actual running of the clinic appeared to be the nurses' main activity. In general, procedures for patient flow and clinic operation proceeded smoothly and efficiently at the time of observation. Patients in the pneumothorax clinic received special consideration. Routine was not as hurried as in the other clinics, and the physician and the nurse took time to listen to some of the patients' minor complaints. Visits were scheduled so as to avoid interference with the patients' working hours.

The 737 clinic activity study sheets showed very convincingly that many services now performed by the nurse could very safely be turned over to a janitor, housekeeper, nurse's aide, or clerical worker. The following list of miscellaneous activities noted on the sheets turned in by the nurses provides evidence for this statement.

| <i>Type of Activity</i> | <i>Frequency of Occurrence at Clinic Sessions</i> |
|---|---|
| Filed or pulled records | 639 |
| Made out referral slips | 536 |
| Typed records or reports | 28 |
| Made out laundry slips | 63 |
| Wrote orders, etc., on slip for field nurse | 280 |
| Arranged or cleaned medicine cabinets | 191 |
| Cleaned doctor's desk | 249 |
| Cleaned instruments, syringes, needles | 252 |
| Cleaned equipment | 280 |
| Cleaned gloves | 170 |
| Sharpened needles | 58 |
| Swept or mopped floors | 44 |
| Washed furniture | 171 |
| Filled inkwells | 129 |
| Requisitioned or checked supplies | 249 |
| Checked linen in or out | 154 |
| Answered telephone | 659 |
| Transported patient | 45 |
| Acted as doorkeeper and directed patient | 402 |
| Assisted patient to undress | 382 |
| Weighed and measured patient | 609 |

| <i>Type of Activity</i> | <i>Frequency of Occurrence at Clinic Sessions</i> |
|--|---|
| Took temperature, pulse, respiration | 621 |
| Sterilized equipment | 248 |
| Wrapped or packed supplies for sterilization | 162 |
| Entertained children | 91 |
| Transported supplies | 70 |

Although a few of the duties listed should be carried by the nurse because they offer opportunities to teach the patients, the majority represent a great deal of professional nursing time and effort that might well be used more productively.

THE MOBILE PHOTOFLUOROGRAPHIC UNIT The personnel of this unit consists of two public health nurses and one technician who rotate their duties at regular intervals. A maximum of one public health nurse to each mobile unit might be sufficient, since the chief need for a nurse is to have someone present who is able to answer questions and give instructions to patients who wish detailed information in regard to tuberculosis. One nurse should be able to take care of this phase of the program as well as to participate in the unit's other activities.

NURSING IN THE VENEREAL DISEASE PROGRAM

The venereal disease nursing program in Chicago is carried chiefly by the nursing staff of the Chicago Health Department, and an undetermined amount of field nursing service is rendered by nurses of the Infant Welfare Society and the Visiting Nurse Association, who give instruction or care in the home to patients or contacts of patients with gonorrhea or syphilis.

The health department nursing program consists of clinic nursing activities at the Chicago Intensive Treatment Center, clinic nursing service at seven other health department clinics, and field nursing visits rendered by the generalized nursing staff. In view of the shortage of nurses and the heavy case loads of the nursing staff, home visiting is limited to venereally diseased expectant mothers and infants under two years of age. During 1945 the health department nurses made 7,099 home visits in connection with venereal diseases and served at 5,428 sessions in the seven venereal disease clinics. In addition, the full-time services of fifty-one nurses were employed at the Chicago Intensive Treatment Center in hospital or clinic activities.

NURSING AT CHICAGO INTENSIVE TREATMENT CENTER The fifty-one nurses at the center operate as an entirely independent unit under the direction of the venereal disease control officer and the supervision of a director of nurses. Theoretically, they have been placed under the administrative direction of the public health nursing section of the health department, but new staff nurses are interviewed by the nursing director of the nursing unit at the treatment center, and if they are found satisfactory they are approved for duty by the venereal disease control officer. The director of the health department nursing section is merely sent the names of new staff members and of those resigning. Nurses at the Chicago Intensive Treatment Center are not required to be civil service employees. They are employed in accordance with special provisions set up for the disbursing of the Federal money allocated to the Chicago Health Department for venereal disease control.

No detailed study of the activities of the nurses in this unit was made. Members of the survey staff visited the Chicago Intensive Treatment, however, in order to secure a picture of its nursing service. At the time of the visit, there appeared to be sufficient nurses on duty to take care of the case load very comfortably without pressure. Most nurses have been trained for a specific job and remain on this assignment for the duration of their stay.

Nursing activities consist mainly of hospital duties and routine clinic activities. A number in this group have been given special training in fever therapy and are assigned special duties, being classified as "fever technicians." No public health nursing responsibilities, however, have been assigned to any of the nurses, such as interviewing, taking histories, giving instruction to the patient, making home follow-up visits, and the like.

HEALTH DEPARTMENT FIELD NURSING SERVICES The following types of home visits were carried by the general staff nurses assigned to work under the direction of the venereal disease control officer: follow-up visits to expectant mothers (a) with gonorrhea or syphilis or (b) suspected of having gonorrhea or syphilis; follow-up of infants under two years of age, (a) born of mothers with gonorrhea or syphilis, (b) having been in contact with cases of gonorrhea or syphilis, or (c) diagnosed as having gonorrhea or syphilis.

The time devoted by the staff of the Chicago-Cook County Health Survey to observing the home visits made by these nurses was too brief to provide any constructive evaluation of their services, except

to note that like many other field visits theirs were short and lacked comprehensiveness.

NURSING IN HEALTH DEPARTMENT V. D. CLINICS In these clinics as in many others included in this study, nurses have many duties and responsibilities which could be performed by someone other than a nurse. Listed below are examples of the type and frequency of such activities recorded on the 186 activity sheets filled in by nurses serving in the venereal disease clinics.

| <i>Type of Activity</i> | <i>Frequency of Occurrence at Clinic Sessions</i> |
|-------------------------------------|---|
| Cleaned gloves | 115 |
| Cleaned instruments, syringes, etc. | 163 |
| Cleaned equipment | 134 |
| Cleaned doctor's desk | 66 |
| Washed furniture | 96 |
| Filled inkwells | 39 |
| Answered telephone | 82 |
| Acted as doorkeeper | 134 |
| Transported supplies | 20 |
| Assisted patient to undress | 53 |

The following examples of desirable health education activities, although not as numerous as they might be, provide encouraging signs that the venereal disease clinic nurses are aware of what should be done and are doing as much as possible considering the heavy case loads they carry.

| | |
|---|----|
| Interpreted treatment to patient | 5 |
| Interview for obtaining contact information | 5 |
| Instructive interview | 9 |
| Case-holding interview | 14 |
| Explained doctors' orders | 58 |
| Explained doctors' findings | 25 |
| Gave out literature | 13 |
| Gave instructions regarding literature | 13 |

SUMMARY OF TIME STUDY FINDINGS^{*}

The study of the allocation of nursing time in relation to nursing activities, in which thirty-nine agencies and slightly more than 95

^{*} Space limitations made it impossible to publish the forms used in the time study and the detailed tables upon which this summary of findings is based. A small supply of mimeographed copies of these tables is available at the District Office of the United States Public Health Service, 610 South Canal Street, Chicago 7, Ill.

percent of all public health nurses employed in Chicago and Cook County participated, was the greatest single activity undertaken by the nursing survey. The time study was conducted for a period of four weeks. Agencies with 200 or more nurses participated for a two-week period, and agencies with 100 to 199 nurses, for a three-week period. All other agencies conducted the study for the full four weeks. A daily report card was used. Small meetings were planned and scheduled at which the mimeographed instructions for the use of the report card were distributed and interpreted by members of the survey staff. Nurses and supervisors of the various staffs participating attended the meetings, and many points regarding the operation of the survey were clarified at this time. Several additional meetings were held at later dates upon the request of individual agencies.

Since no clear-cut picture of utilization of nursing time could emerge from the survey unless there was an active interest in such information on the part of the nurses themselves, efforts were made to emphasize to each group the importance of accurate nurse participation and the recording of all activities. There are many reasons to believe that such an interest was stimulated and that the majority of nurses filled out the forms conscientiously and with great care.

DISTRIBUTION OF NURSING ACTIVITIES In determining the percentage of actual nursing time devoted to the service part of the nursing programs in Chicago and Cook County, the broadest possible interpretation was placed upon the term "service program." Not only home visits, office visits (conferences with parents in clinic or pupils in school), but also miscellaneous clinic and school time were included under this heading, even though these last two types of activity may or may not include some service to patients.⁹ Despite this very liberal interpretation of time devoted to nursing service, the findings indicate that less than 50 percent of all staff nursing time

⁹ The time designated as "miscellaneous school" or "miscellaneous clinic" represents only the time which the nurse spent in the school or clinic which she was unable to allocate to some other classification, such as "clerical," telephoning, office visits, and conferences. Except for assisting the physician, this time would therefore appear to represent activities having to do with the administration or running of the clinic or school service rather than service to a patient. A further analysis, giving total time spent in clinic or school and the percentage of the time spent in the various activities while there, was not possible with the amount of statistical assistance available to this section of the survey. This further refinement of the study might be undertaken by interested individual agencies or by an organized nursing group, such as the Chicago Council on Community Nursing or the First District of the Illinois State Nurses' Association.

in the Chicago-Cook County area was spent in activities connected with the service program. The percentage distribution of service time by type of activity was as follows.

| <i>Type of Activity</i> | <i>Percentage of Time</i> | |
|--|---------------------------|--------------------|
| | <i>Chicago</i> | <i>Cook County</i> |
| Home visits | 28.5 | 15.2 |
| Miscellaneous clinic activities | 16.7 | 6.3 |
| Miscellaneous school activities | 1.4 | 11.3 |
| Office visits (school or clinic) | 1.5 | 7.6 |
| <hr/> | | |
| Total percentage of time devoted to service to patients | 48.1 | 40.4 |

"Travel," "telephone," "office and clerical," and "individual and group conferences" make up the larger proportion of the remaining 50 to 60 percent of the time devoted by nurses to nonservice activities. Each agency should scrutinize and evaluate rather carefully these nonservice activities in order to reduce to a minimum the amount of time spent in any activity not directly concerned with service to patients. In addition, some agencies with high percentages of unallocated school or clinic time (miscellaneous school or clinic time) might explore the actual use to which this time was devoted in order to ascertain the extent to which nonnursing activities formed part of this percentage. The clinic and school activity check sheets indicated that nurses in schools and clinics were performing many nonnursing activities which might have been performed by non-professional personnel. The percentage of time allocated to non-nursing activities in some agencies suggests the possibility that in some instances such activities constitute a sizable proportion of the total nursing time of these agencies.

TIME DISTRIBUTION OF SUPERVISORY ACTIVITIES The chief objective of supervisory activities is to assist the staff nurse in improving the quality of her nursing service to the public. This objective is, of course, achieved by a variety of methods, but always by activities that in some form or another have to do with the nurse rendering the service. The extremely small percentage of time spent in direct nursing supervision by the supervisors of some agencies in Chicago and Cook County is reflected in the following tabulation for the group as a whole.

| <i>Activities of Supervisors Directly Related to Nursing Staff Supervision</i> | <i>Percentage of Time of Supervisors Spent with Nursing Staff</i> | |
|--|---|--------------------|
| | <i>Chicago</i> | <i>Cook County</i> |
| All types | 39.1 | 26.5 |
| Staff conferences (group) | 12.2 | 4.0 |
| Staff conferences (individual) | 6.3 | 8.1 |
| Supervision of nursing service | 20.6 | 14.4 |
| Home visits | 10.0 | 3.3 |
| Clinic activities | 8.0 | 6.2 |
| School activities | .1 | 1.0 |
| Office visits (school and clinic) | 2.4 | 3.8 |
| Nursery school | .1 | .1 |

These percentages indicate that only a small proportion of the supervisor's time is devoted to direct supervision of her staff. A supervisor must write reports, read current professional literature, attend professional meetings, and make outside contacts. If, however, these activities occupy a large portion of her time, she will be unable to maintain effective staff supervision. Each agency should make every effort to increase the amount of supervisory assistance to its nursing staff by carefully evaluating all supervisory activities not directly connected with the nursing program. Clerical activities, miscellaneous conferences and meetings, and telephoning should receive special scrutiny.

INDUSTRIAL NURSING

The scope of industrial nursing is much broader than it was before the war. Industrial expansion during the war and the scarcity of physicians placed increased responsibilities upon the industrial nurses. The employment of older and less physically able workers in industry necessitated more emphasis upon the preventive aspects of the nursing program. At the time of the survey, the industrial nurse still had increased responsibilities, and, although the emphasis had changed somewhat, prevention of illness remained an important part of her program. Industrial nursing services today may be outlined as follows: assistance with the management and maintenance of the plant medical department; nursing care of occupational injuries and illnesses; participation in the medical examination program; participation in the health education program; assistance with the accident control and safety education program; assistance with environmental sanitation; participation in the plant welfare program; nursing serv-

ice to ill or injured employees in their homes when there are no community facilities available to care for such service.¹⁰

The scope of the industrial nurse's activities will depend largely on the size of the plant, the extent of the medical supervision and safety services available, the attitude of management toward the health of the worker, and last, but not least, the preparation of the industrial nurse herself.

The statistics on the extent to which nursing services are provided by industrial plants in the Chicago-Cook County area, personnel policies, salaries, professional qualifications of industrial nurses, the activities of the industrial nurses included in the survey, and other pertinent items were obtained from three sources: (1) the 1,399 questionnaires returned by industrial plants in connection with the industrial hygiene survey (see Chapters 32 and 33); (2) a special study of the professional status of industrial nurses conducted by the Industrial Nurses' Section of the Illinois State Nurses' Association early in 1946; (3) a survey of industrial nursing activities based on check lists of activities prepared for the survey by a special consultant committee of the Industrial Nurses' Section of the First District of the Illinois State Nurses' Association.

EXTENT OF INDUSTRIAL NURSING IN CHICAGO-COOK COUNTY AREA
There was no provision for industrial nursing in 1,000 of the 1,399 plants included in the industrial hygiene survey (see Figure 13 on p. 645). The majority of the industrial nurses were employed in large plants; practically none was reported by plants with 100 employees or fewer. Only 250 plants reported the employment of registered nurses, either full-time or part-time. The percentage of plants employing full- or part-time registered nurses increased as the size of the plants increased, as the following tabulation indicates.

| <i>Number of Employees</i> | <i>Number in Each Size Group</i> | <i>Percentage Employing Full- or Part-Time Registered Nurses</i> |
|----------------------------|--------------------------------------|--|
| 1- 100 | 698 | 0.29 |
| 101- 250 | 347 | 9.22 |
| 251- 500 | 148 | 39.19 |
| 501-1,000 | 107 | 62.62 |
| 1,000 and more | 99 | 91.92 |

Full-time nursing services were provided by 556 graduate registered nurses in 238 of the 1,399 reporting plants. Almost half these

¹⁰ United States Public Health Service, *Manual of Industrial Hygiene*. Philadelphia, W. B. Saunders Company, 1943, Ch. V, pp. 67-68, and the author's note, p. 68.

nurses were employed in 33 of the largest plants. Eighteen plants reported the part-time services of 24 registered nurses. Full-time nurses were also employed in 6 of these 18 plants.

Percentage of workers in plants with nursing service.—The full-time services of registered nurses are available mainly to large-plant employees. The following tabulation shows the very small percentage of employees in small plants for whom the services of either registered or unregistered nurses were provided:

| Size of Plant | Percentage of Workers Covered | | | |
|---------------------------------|-------------------------------|-----------|---------------------|-----------|
| | Registered Nurses | | Unregistered Nurses | |
| | Full time | Part time | Full time | Part time |
| Large (more than 100 employees) | 76.8 | 3.8 | 10.2 | 1.2 |
| Small (100 or fewer employees) | 0.3 | 0.3 | 0.2 | 0.0 |

Comparison of the statistics obtained in the 1939 industrial hygiene survey of Illinois with those secured in the Chicago-Cook County survey indicates that the number of industrial workers for whom the full-time services of registered nurses are available today is almost twice the number reported for 1939.

Home visiting by industrial nurses.—Visiting nurse services were available to 45.8 percent of the employees in the 1,399 reporting plants, provided to 42.5 percent by plant nurses, and to 3.3 percent by nurses from outside agencies. The industrial employees to whom the home services of plant nurses were available were for the most part in the large plants. Only 2.8 percent of the employees of smaller plants received visiting nurse services, practically all provided by the plants through nurses from outside agencies with which these plants had contracted for service.

If a plant provides plant nurses to visit ill or injured employees in their homes or arranges with public health nursing agencies for their nurses to give this service it contributes definitely to the promotion of workers' health and morale. Whenever possible, it usually is more desirable to have nurses from the local public health nursing agencies give this bedside care. If, however, no community resources of this type are available, or if they cannot be co-ordinated with plant policy, it may be necessary for an industrial plant to employ its own nurses. Such plant nurses should have had public health nursing experience before undertaking industrial nursing.

Need for nursing services for small plants.—The complete lack of industrial nursing services reported by most of the small plants indicates that this service should be provided by some method of

outside organization. The small plants can meet this need in a number of ways: (1) by purchasing part-time nursing service from a visiting nurse association or public health agency, which may carry this responsibility for several small plants; (2) by having several industrial plants in an area engage a nurse to work part time in each plant; (3) by the establishment of manufacturers' health clinics. This type of service can be set up by a group of three or more small plants, which might pool their resources to establish a clinic and plant service that includes not only the care of injuries and accidents but all activities which should be part of an adequate industrial health service. The clinic should be located conveniently with respect to the plants served, so that workers can visit the clinic or clinic personnel may visit the plant by using a minimum of travel time. The basic staff for a service of this type is one part-time medical director and a full-time specially qualified industrial nurse. Consultation service on nursing could be secured from the industrial nursing consultant in the Division of Industrial Hygiene of the Illinois Department of Public Health.

LENGTH OF SERVICE IN INDUSTRIAL NURSING Tabulation of the number of years of tenure reported by 244 nurses in industry who answered this question on the nursing activity sheet revealed that nearly two thirds (160, or 66 percent) had entered the field of industrial nursing within the last five years, more than 29 since the end of the second World War. These figures show both the sudden increase in the employment of industrial nurses at the beginning of and during the war and the continued employment of nurses by industry after the war ended. The findings are significant, because they indicate that industries recognized the importance of industrial nursing and did not eliminate their nursing services when their war contracts terminated. The detailed tabulation follows.

| <i>Tenure of Nurses in Industry</i> | <i>Number of Nurses</i> |
|-------------------------------------|-------------------------|
| Less than one year | 29 |
| 1- 1.99 | 37 |
| 2- 2.99 | 18 |
| 3- 3.99 | 49 |
| 4- 4.99 | 27 |
| 5- 5.99 | 27 |
| 6- 9.00 | 21 |
| 10-14.00 | 16 |
| 15-19.00 | 11 |
| 20-25.00 | 9 |

PERSONNEL POLICIES IN 173 INDUSTRIAL PLANTS From 173 plants in a number of different industries information was obtained about hours of work, sick leave, vacations, insurance and pension plans, basic salaries, standing orders, and medical supervision. A total of 331 industrial nurses—48 supervisors, 104 charge nurses, and 179 staff nurses—were employed by the reporting plants. The nursing services were available to 201,373 employees. The types of industry represented in the study and the number and percentage of plants of each type are tabulated below.

| <i>Type of Industry</i> | <i>Reporting Plants</i> | |
|--|-------------------------|-------------------|
| | <i>Number</i> | <i>Percentage</i> |
| All types | 173 | 100.0 |
| Banking; civil service navy yards (warehouse) | 2 | 1.1 |
| Chemical and allied | 4 | 2.3 |
| Cigars and tobacco | 1 | 0.6 |
| Clay, glass, and stone | 2 | 1.1 |
| Clothing | 2 | 1.1 |
| Commercial establishments | 11 | 6.4 |
| Food | 13 | 7.6 |
| Insurance | 2 | 1.1 |
| Iron and steel; machinery and vehicles | 49 | 28.4 |
| Leather | 3 | 1.7 |
| Lumber and furniture | 3 | 1.7 |
| Metals | 16 | 9.3 |
| Miscellaneous manufacturing | 52 | 30.1 |
| Paper, printing, and allied industries | 11 | 6.4 |
| Textiles | 2 | 1.1 |

Hours of work.—Nurses in 137 of the 173 reporting plants (79 percent) had a 40-hour basic weekly work schedule. In 36 plants (21 percent) a 41- to 48-hour basic schedule was reported. Nurses in 78 plants (45 percent) worked from 3 to 18 hours overtime each week, and in 9 plants (5 percent) from 1 to 8 hours.

Of the 351 nurses employed in these plants, 272 worked during the day, and 59 at night. Extra compensation for night work was paid by 35 of the 50 plants which reported night duty.

Salaries reported for industrial nurses.—The basic weekly salary paid was reported for 323 of the 331 nurses. Among the group as a whole, 93 percent received less than \$50 a week, and 22 percent received less than \$35 weekly. Salaries of \$50 a week and more were

reported for only 7 percent. Fourteen of the 24 nurses (58 percent) receiving \$50 a week or more were supervisors, as were all 3 nurses for whom \$65 or more weekly was reported. The statistics are presented in Table 107. Payment for overtime was reported by a number of plants, but the amounts paid were not stated.

The figures in Table 108 show that the salaries of industrial nurses in the Chicago-Cook County area are far too low considering the

TABLE 108. BASIC WEEKLY SALARY OF INDUSTRIAL NURSES—
CHICAGO AND COOK COUNTY

| | NURSES | | SUPERVISORS | | CHARGE NURSES | | STAFF NURSES | |
|--------------|--------|---------|-------------|---------|---------------|---------|--------------|---------|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Basic Salary | | | | | | | | |
| \$20-\$34.99 | 71 | 22 | 2 | 4 | 23 | 24 | 46 | 26 |
| 35- 49.99 | 228 | 71 | 32 | 67 | 69 | 71 | 127 | 71 |
| 50- 64.99 | 21 | 1 | 11 | 23 | 5 | 5 | 5 | 3 |
| 65- 80.00 | 3 | 6 | 3 | 6 | ... | ... | ... | ... |
| Total | 323 | 100 | 48 | 100 | 97 | 100 | 178 | 100 |

special preparation needed by these nurses and the responsibilities they are expected to assume. Salaries paid nonprofessional employees in the industrial hygiene divisions of these plants are in a great many instances higher than those which the professional nurses receive.

Sick leave, vacations, insurance, and pension plans.—Much still remains to be done in securing adequate allowances of time for sick leave for the industrial nurse. Although all except 2 plants reported that vacation time with pay was allowed, 43 plants, or 25 percent, did not grant sick leave with pay to their nurse employees. Approximately 82 percent of the plants gave 2 weeks or more of vacation time with pay, while only 42 percent allowed 2 weeks or more sick leave with pay. Only 59 plants had any pension plan, although in 138, or 80 percent, some type of insurance benefit was available to the nurses.

Medical supervision and standing orders.—A large number of plants employing nurses in the Chicago-Cook County area have neither a full-time nor even a part-time physician in charge of the medical department. According to the findings of the study of 173 plants, only 11 percent reported a full-time physician; 30 percent, a part-time physician; 57 percent, physicians "on call" only; and 2 percent, none. These percentages indicate that nearly 60 percent of the plants employing nurses resorted to "on call" physicians only or were completely without medical supervision. Approximately the same situation was revealed in the more comprehensive study made by the

Chicago-Cook County Survey of Industrial Health and Hygiene (see Chapter 32).

The nurse is responsible to the physician in charge for any treatment or medication given the worker, and standing orders should be obtained for all such treatments or medications. Only 71 percent of the 173 reporting plants indicated that they provided standing orders for industrial nurses, leaving 29 percent without this protection.

EDUCATIONAL PREPARATION In industrial nursing, as in other fields of nursing, the preparation of the nurse, both academic and professional, is an important factor in the success of the industrial health program. Better prepared nurses should render a much better quality of nursing service in the plant. Industrial nursing requires a variety of knowledge and skills that comes only with training and experience. Essential qualifications for industrial nurses include high school graduation, graduation from an approved school of nursing, and state registration, as well as some postgraduate study in industrial nursing which should include the social and health aspects of nursing. In addition, she should have certain personal qualifications which will enable her to work effectively with people. It is also desirable that she have some experience in a hospital outpatient department (especially in the emergency ward or clinic). Experience in medical and surgical, psychiatric, and public health nursing would be of additional value.

Data about academic and professional education was reported for 328 of the 331 nurses in the 173 plants.¹¹ Their academic preparation was as follows.

| <i>Educational Preparation</i> | <i>All Nurses</i> | <i>Number in Specified Positions</i> | | |
|--|-------------------|--------------------------------------|----------------------|---------------------|
| | | <i>Supervisors</i> | <i>Charge Nurses</i> | <i>Staff Nurses</i> |
| Total | 328 | 48 | 103 | 177 |
| Less than complete high school education | 7 | 1 | 4 | 2 |
| High school graduates (no college work) | 167 | 7 | 55 | 105 |
| No degree, but some college work | 141 | 35 | 40 | 66 |
| College degree | 13 | 5 | 4 | 4 |

In addition, a number of the nurses had taken the following types of special preparation.

¹¹ No information was supplied on one charge nurse and two staff nurses.

| | <i>Supervisors</i> | <i>Charge Nurses</i> | <i>Staff Nurses</i> |
|---|--------------------|----------------------|---------------------|
| Industrial nursing course | 23 | 29 | 39 |
| One semester public health | 6 | 7 | 26 |
| One year or more of study in public health | 8 | 8 | 11 |

These statistics are encouraging, since they represent considerable improvement over the situation several years ago, when fewer industrial nurses had had postgraduate education or any additional preparation. Among the 328 nurses reporting in the present study, approximately 28 percent had taken a course in industrial nursing, 12 percent had had one semester in public health, and 8 percent had had a year or more of public health study.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES The extent of a nurse's interest in keeping abreast of the times with relation to her profession has a definite influence upon her effectiveness in the industrial nursing program. Nurses active professionally in the nursing field have much more to bring to the worker and his family than does a nurse who not only is unaware of new trends in nursing but lacks information about developments in allied fields, such as nutrition and mental hygiene. Many progressive plants supply professional books and magazines for the use of their medical department personnel.

The following data were obtained from the 331 nurses with regard to active state registration and membership in professional nursing organizations.

| <i>Registration and Membership in Organizations</i> | <i>Nurses</i> | <i>Percentage</i> |
|---|---------------|-------------------|
| Registered in Illinois | 306 | 92 |
| Registered in other states | 49 | 15 |
| Members of the Illinois State Nurses' Association | 278 | 84 |
| Members of the American Association of Industrial Nurses | 125 | 38 |
| Members of the National Organization for Public Health Nursing | 43 | 13 |

INDUSTRIAL NURSING ACTIVITIES The activities of the industrial nurse differ materially depending upon the size of the plant and the type of medical service given. In the Chicago-Cook County area

nurses generally give emergency care in accidents and illness, do redressings, give treatments, refer patients to private physicians and dentists for needed care and supervision, participate in health education activities, and are responsible for the equipment and supplies of the medical department and for its cleanliness and orderliness.¹²

Assistance with physical examinations and follow-up.—Reports from the 287 nurses participating in the activity study indicate the following activities in connection with the physical examination program.

| <i>Type of Activity</i> | <i>Nurses</i> |
|--|---------------|
| Taking health histories | 183 |
| Weighing and measuring | 151 |
| Taking temperature, pulse, and respiration | 240 |
| Taking blood pressure | 161 |
| Testing visual acuity | 140 |
| Interpreting physician's findings to employee | 182 |
| Interpreting physician's findings to department head | 143 |
| Interpreting physician's findings to employment division | 203 |
| Follow-up of correctible defects | 198 |
| Follow-up of chronic defects | 184 |
| Follow-up of physical handicaps | 265 |

Although this tabulation shows that many of the nurses are recognizing the importance of the follow-up procedures for correcting remedial defects, social maladjustments, and the interpretation of findings to workers, still more emphasis should be placed upon this part of the industrial nurse's program.

Health education program.—Participation by the industrial nurse in the health education program is highly important and is essential to the maintenance of the worker's health. Too frequently this part of the industrial nurse's program for influencing workers to establish desirable health habits receives insufficient recognition. The activity study shows that the 287 nurses returning the forms participated in the following types of health education activities.

¹²Space does not permit publication of the detailed tables prepared from the findings of this activity study. Some mimeographed copies are available upon request from the District Office of the United States Public Health Service, 610 South Canal Street, Chicago 7, Ill.

| <i>Type of Activity</i> | <i>Nurses</i> |
|--|---------------|
| Preparing articles for house organ | 73 |
| Using posters on health and safety | 184 |
| Distributing health and safety literature | 152 |
| Using movies or films on health and safety | 54 |
| Individual health and safety teaching | 164 |
| Conducting classes in first aid | 41 |
| Conducting classes in personal hygiene | 36 |

Safety education, accident control, and environmental sanitation.—Although most plants today have special personnel to take care of these phases of the plant program, the nurse needs to participate in many activities which relate to this field and contribute to the prevention of accidents and the promotion of workers' health. The following tabulation of information given on the 287 activity sheets shows that the industrial nurses in the Chicago-Cook County area participated extensively in the safety education, accident control, and environmental sanitation programs of the plants in which they were employed. The extent of their activity in each plant probably depended upon the size of the plant and the plant policy with regard to such programs.

| <i>Type of Activity</i> | <i>Nurses</i> |
|--|---------------|
| Attending safety meetings | 141 |
| Distributing and caring for safety equipment | 89 |
| Making plant tours to inspect safety equipment | 82 |
| Making suggestions regarding safety | 160 |
| Studying job accidents for compensable claims | 121 |
| Distributing health and safety literature | 153 |
| Using posters on health and safety | 184 |
| Using movies or films on health and safety | 54 |
| Making plant tours to inspect lighting and ventilation | 90 |
| Making suggestions re lighting and ventilation | 121 |
| Making sanitary inspections of cafeteria | 64 |

Records and reports.—Adequate records include a daily log or tally sheet, an individual health record, physical examination records, compensation records and reports, and disability absentee records. Routine monthly annual reports of activities provide a means of bringing the accomplishments of the industrial hygiene division to the attention of the management. Table 109 presents a tabulation

of the number and percentage of the 287 nurses who reported record-keeping of various types.

TABLE 109. RECORD-KEEPING BY INDUSTRIAL NURSES

| TYPE OF ACTIVITY | NURSES WORKING WITH PHYSICIANS | | | | | | | | | |
|-------------------------------------|--------------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|---------------|-----------------|
| | ALL TYPES | | FULL TIME | | PART TIME | | ON CALL | | NOT SPECIFIED | |
| | Num- ber | Per- centage | Num- ber | Per- centage | Num- ber | Per- centage | Num- ber | Per- centage | Num- ber | Per- centage |
| Assisting with compensation reports | 163 | 56.8 | 45 | 44.1 | 37 | 58.7 | 69 | 65.1 | 12 | 75.0 |
| Keeping absentee records | 152 | 53.0 | 45 | 44.1 | 36 | 57.1 | 58 | 54.7 | 13 | 81.3 |
| Making weekly reports | 109 | 38.0 | 35 | 34.3 | 25 | 39.7 | 42 | 39.6 | 7 | 43.8 |
| Making monthly or annual reports | 182 | 63.4 | 52 | 51.0 | 43 | 68.3 | 82 | 77.4 | 9 | 56.3 |
| Keeping individual health records | 202 | 70.4 | 65 | 63.7 | 51 | 80.9 | 75 | 70.7 | 11 | 68.7 |

Nonnursing activities.—Information as to the extent to which professional nurses engage in activities which might be performed by nonprofessional workers is particularly important if essential nursing activities are left undone because of these nonnursing responsibilities. Approximately 72 percent of the 287 nurses who reported in the activity survey indicated that they participated in activities outside the medical department and not related to it. The analysis of activities related to follow-up of remedial defects and interpretation of the physical examination and the physician's findings indicate that nurses do not participate in these activities as much as they might. Only 55 to 65 percent of the nurses indicated responsibilities along these lines. In general, more emphasis might be placed upon carrying out a comprehensive health program, with the delegation of nonnursing duties to other personnel. This adjustment would allow an increase in the essential phases of nursing service to the worker. In the last analysis, the health of the worker is the important consideration in any program, and any method by which this can be improved should be utilized to the fullest extent.

PUBLIC HEALTH NURSING IN COOK COUNTY

by *Florence H. Callahan, R.N.*

PUBLIC HEALTH NURSING SERVICES in the area of Cook County outside Chicago are provided by various official and voluntary agencies. The Cook County Department of Public Health and the Tuberculosis Institute of Chicago and Cook County operate in towns and villages in which no local community service is available and in rural areas. The local official agencies which employ public health nurses are: 6 city or village health departments, 4 villages which have no organized health departments, 16 elementary school boards of education, and 8 high school boards. Public health nurses are also provided by 7 voluntary agencies and 2 insurance companies. Table 110 shows the distribution of the 160 public health nurses working in Cook County (exclusive of Chicago) by employing agency and position (staff nurse, director, supervisor, and consultant).

The nursing organization and programs of the two over-all agencies—the Cook County Department of Public Health and the Tuberculosis Institute of Chicago and Cook County—will be presented first in this chapter. Separate discussion of the public health nursing services—official and voluntary—in each city and village will follow. Nursing activities will be presented for the county as a whole (exclusive of Chicago) in the following fields of public health: communicable diseases, tuberculosis, the venereal diseases, maternal, infant, and preschool health, and school health.

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

The Division of Public Health Nursing of the Cook County Department of Public Health is responsible administratively to the medical director of the department. This division in its present form is newly organized, although the Cook County Bureau of Public Welfare has operated a nursing service since 1927. The present staff consists of a nursing director, 2 consultants, 4 supervisors, and 29 staff nurses, all but one of whom either operate from the three substations in the

TABLE 110. NUMBER OF PUBLIC HEALTH NURSES SERVING COOK COUNTY BY EMPLOYING AGENCY AND TYPE OF POSITION (EXCLUSIVE OF CHICAGO)^a

| <i>Agencies Providing Nursing Service</i> | <i>Total</i> | <i>Staff Nurses</i> | <i>Directors Supervisor; Consultants</i> |
|---|-----------------|---------------------|--|
| Health departments | | | |
| Cook County | 36 | 29 | 7 |
| Evanston | 6 | 5 | 1 |
| Oak Park | 3 | 2 | 1 |
| Berwyn | 2 | 2 | .. |
| Cicero | 4 | 3 | 1 |
| Wilmette | 1 | 1 | .. |
| Winnetka | 4 | 4 | .. |
| Villages or townships | | | |
| Elmwood Park | 1 | 1 | .. |
| Maywood | 1 | 1 | .. |
| Skokie | 1 | 1 | .. |
| Western Springs (school and community) ^b | 1 | 1 | .. |
| Boards of education | | | |
| Elementary schools (16) | 29 | 28 | 1 |
| High schools (8) | 12 | 12 | .. |
| Voluntary agencies | | | |
| Tuberculosis Institute of Chicago and Cook County | 28 | 27 | 1 |
| Evanston Visiting Nurse Association | 11 | 9 | 2 |
| Infant Welfare Society, Evanston | 4 | 3 | 1 |
| Oak Park Center, Infant Welfare Society of Chicago | 1 | 1 | .. |
| Family Welfare Association of Oak Park | 2 | 2 | .. |
| Glencoe Relief and Aid Society | 1 | 1 | .. |
| Community Nurse and Service Association, La Grange | 1 | 1 | .. |
| Wilmette Health Center | 1 | 1 | .. |
| Metropolitan Life Insurance Company | 10 ^c | 9 | 1 |
| All agencies | 160 | 142 | 17 |

^a Two nurses employed by Stickney Township not included.^b Supported also by Western Springs Community Chest.^c Including part-time service by a John Hancock Life Insurance Company nurse.

county or are attached to the central office. One nurse is assigned to the sheriff's office. Each of the substations is under the administration and direction of a public health nursing supervisor. A nutritionist and a health education specialist are available for consultation service to the group.

NURSING PROGRAM The generalized nursing program outlined and planned by the Division of Public Health Nursing is comprehensive in scope and well thought out as to content and detail. However, in an overzealous effort to expand the services and extend them to as much of the population as possible, the nursing program has been overextended and the department has committed itself to a program which cannot be executed efficiently with the staff now employed.

The program covers the following activities: supervision of infants and preschool children; supervision of expectant mothers and post-natal patients; follow-up of tuberculosis cases and contacts; follow-up of venereal disease cases and contacts; follow-up of diagnosed cases and contacts of acute communicable disease; supervision of school children in the school and in the home; follow-up of crippled children in clinic and field; inspection of nursing homes; supervision of nursery schools.

Each nurse's case load is extremely heavy. Many of them carry the responsibility for both school and clinic services in addition to home visiting. The routine case load for each nurse is approximately 185 families and 6.6 schools. Some nurses also serve in clinics once or twice a week. As a result of the number of meetings and conferences attended by the nurses, the time spent in class work, the territory to be covered, the long distances traveled, the comprehensiveness of the program, and the small number of nurses, some aspects of the nursing services are of necessity spread so thinly as to be almost negligible.

The nursing division has laid great stress on its staff education program, attendance at local meetings, and enrollment in various academic courses, and rightly so. The basic aim of all such activities, however, is the improvement of the nursing service to the public. When it appears that this aim is not being adequately achieved, these activities should be re-evaluated and a new estimate should be made of the amount of emphasis and the allotment of time justified for this part of the nursing program.

Nurses are unable to visit schools as often as they should or to make their visits long enough. Visits to tuberculosis and venereal disease patients and contacts are not made as promptly as they should be. Not enough emphasis is placed on locating expectant mothers. Nurses are not always able to visit newborn infants during the first month of life, when nursing advice is so important to the mother. There is too little planning for the nursing visits, which are frequently hurried, and the nurses do too little teaching and give too few demonstrations.

Many of the nurses need assistance in the practical application of the theoretical principles learned in the course of their academic preparation. They need specific help in the actual procedures of home visiting and in planning what to teach for various types of cases and how best to influence persons to desired action.

FUTURE EXPANSION OF NURSING PROGRAM Ideally, the most

economical and efficient method of providing nursing service in Cook County (exclusive of Chicago) would be to inaugurate a unified county-wide health department in which a bureau of public health nursing rendered all public health nursing services, including bedside care. Considering the many public health agencies in the area, however, the peculiar set-up in many communities, and the very strong opposition in some, this co-ordination of services would now be impracticable. It should be considered, rather, as a possibility for the future, to be achieved gradually.

The Division of Public Health Nursing in the Cook County Department of Public Health already has laid the foundations upon which a comprehensive and efficient public health nursing service can be built. The staff has had good academic preparation, the nursing programs are sound theoretically; manuals of instruction are available; and the administrative staff has a thorough appreciation of the advantages of a generalized nursing program. With a larger staff and a different emphasis in time allotment with respect to certain nursing activities, the division should be able not only to establish an adequate generalized public health nursing program in the area now covered, but in time to take over, upon request, responsibilities in communities in which the officials find it impossible to provide such services.

In the judgment of the survey staff, successful execution of the comprehensive public health nursing program recommended by the Chicago-Cook County Health Survey would require the employment of the following nursing personnel at the salary ranges specified: the director of the division (\$5,000 to \$6,000); an assistant director in charge of education (\$4,600 to \$5,200); a total of 4 public health nursing consultants (\$4,000 to \$4,800) in each of the following fields: tuberculosis, acute communicable diseases (including the venereal diseases), adult, maternal, and child hygiene, and school and mental hygiene; 12 supervisors (\$3,400 to \$4,200); 84 public health nurses (\$2,600 to \$3,600); 1 junior public health nurse (\$2,000 to \$2,800).

If nursing service in the public or parochial high schools were included, 19 additional nurses would be needed, and from 28 to 40 nurses would be required for a bedside nursing care program. The consultants in nutrition and health education would continue to work with the Division of Public Health Nursing and to be respon-

sible administratively to the medical director of the health department.

TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY

The Tuberculosis Institute of Chicago and Cook County is a voluntary agency supported chiefly by the sale of Christmas seals and partially by fees collected from the various communities in which nursing service is provided. Although receipts from fees in 1945 amounted to less than 10 percent of the agency's income, funds from this source were equivalent to approximately 50 percent of the nursing staff salaries.

ORGANIZATION AND PERSONNEL OF THE NURSING SERVICE One supervisor who acts as director of the nursing service and 27 public health nurses comprise the nursing staff. Nurses who have public health nursing certificates are paid beginning salaries that are ten dollars a month higher than the salaries paid nurses who lack this qualification. New nurses without certificates in public health nursing are allowed to attend school two half days a week in order to secure the educational qualifications necessary for certification. As a result of this policy, a considerable number of the nurses have taken postgraduate work in public health nursing. The age of the Tuberculosis Institute nurses tends toward the upper brackets. Fourteen, or 50 percent of the staff, are fifty or older. Four of this group, or 14 percent of the total number, are sixty or older.

The Tuberculosis Institute nurses are assigned to twenty-two districts or centers throughout the county in areas not covered by the nurses from the Cook County Department of Public Health. Nursing service is given in thirty-nine different communities and is subsidized by many types of agencies: local health departments, elementary school districts, high schools, welfare associations, village boards, and health councils. No standard pattern of payment for service has been established. In general, a rate of \$30 per month for one day's nursing service a week has been used as a tentative guide. Some communities pay nothing for the services provided by the Tuberculosis Institute nurses; in others, the service is purchased, but the specific amounts paid depend upon the urgency of the need and the financial ability of the village or agency served to meet full or partial costs.

NURSING PROGRAM The Tuberculosis Institute originally established its county nursing service to meet a definite need for

nursing care and supervision of tuberculous persons and their contacts. Gradually this program has been expanded and developed in accordance with varying community demands and needs until at the time of the survey the program included clinic, school, and field nursing services.

Although the major emphasis in the program is on the tuberculosis and school nursing activities, the field nursing service includes home visits to women during the prenatal and postnatal periods, to infants, to preschool and school children, to adults, and to crippled children. Clinic nursing service is given in tuberculosis, dental, infant, and preschool clinics and in public and parochial schools. However, in communities where most of the cost of the service is paid from tax funds or by an individual agency, the nursing program is influenced to a great extent by the wishes of the supporting agency. Nurses also assist with the mobile photo fluorographic unit operated in Chicago when the schedule of the Municipal Tuberculosis Sanitarium unit becomes too heavy.

During 1945 nurses of the Tuberculosis Institute made 10,403 visits to tuberculous patients, 834 to cases of communicable diseases, 640 to prenatal or postnatal patients, 443 to infants, 395 to preschool children, 7,709 to school children, 340 to adults, and 256 to crippled children. In addition, 8,184 visits to 106 schools were made throughout the school year.

Further discussion of the work of the Tuberculosis Institute nurses is given in the sections of this chapter relating to nursing in special fields.

PUBLIC HEALTH NURSING IN EVANSTON

Public health nursing services in Evanston, a city with a population of 65,389 in 1940, are supplied by 32 public health nurses employed by 7 different organizations. If the service were generalized, including bedside care, this number of nurses would be sufficient to meet the recommended ratio of 1 nurse to 2,000 population. Several agencies, however, serve in one or more of the following programs: maternal, infant, and preschool care, school nursing, communicable-disease control, and bedside nursing care. Nurses from different agencies who cover the same territory and are responsible for making the same type of home visits thus duplicate both travel time and service. There is no co-ordination of the school health programs in the various school systems. However, the health commissioner of the

Evanston Department of Health and his staff, together with the other agencies in the city providing nursing services, have reduced duplication to the minimum possible under the present complex set-up and are doing a remarkably fine job of co-ordination, direction, and stimulation in the community.

The agencies providing public health nursing services and the number of nurses employed by each are as follows.

| <i>Agency</i> | <i>Nurses</i> |
|---|---------------|
| Evanston Department of Health | 6 |
| Elementary School District No. 75 | 5 |
| Elementary School District No. 76 | 2 |
| High School District No. 202 | 3 |
| Infant Welfare Society (Evanston) | 4 |
| Visiting Nurse Association of Evanston | 11 |
| Tuberculosis Institute of Chicago and Cook County (nursing supervision in tuberculosis control only) | 1 |

EVANSTON DEPARTMENT OF HEALTH The nursing staff consists of a director and five staff nurses who work under the direction of the full-time health commissioner. All except one of the nurses are certified as public health nurses in Illinois, and all have had some academic preparation in public health nursing; five, one year or more, and one, one semester or less. The director and one staff nurse have degrees in public health nursing, and one staff nurse has a college degree in another field.

The nursing program includes school nursing service to parochial schools, acute communicable-disease nursing, venereal disease nursing, and a restricted program in infant and preschool hygiene. Nurses also assist in the immunization and tuberculosis clinics. During the month of the time-study period the staff nurses spent approximately 10 percent of their time in home visiting, mostly for acute communicable diseases, 9 percent in travel, 10 percent in clinic service, mostly venereal diseases, 7 percent in telephoning, and 23.5 percent in office and clerical work. The amount of time given to activities not associated with service to the patient is extremely high and could no doubt be reduced through careful evaluation of all nursing activities and elimination of those which are nonprofessional.

School nursing.—This program takes up a large share of total nursing time. The four nurses assigned to the parochial schools visit them daily and spend most of the morning in various activities such

as telephoning, office and clerical work, service to pupils in the health room, conferences with teachers, and other miscellaneous duties. The average case load for the staff is 289 children per nurse, not a heavy one considering that the nurses' programs are not generalized completely. The case load in the smallest school is 170 children, and in the largest, 557.

The usual activities of the nurses in the schools were first aid, assisting with physical examinations, testing of vision and hearing, dental inspection, weighing and measuring, parent-teacher conferences, home visiting, health counseling, and checked on three-day absentees (usually by telephone). Relationships between nurses and school principals or teachers were good for the most part. Posters and pamphlets were adequate in approximately half the schools observed. Health room facilities, however, were only fairly adequate, only three schools having a private room used exclusively for this purpose.

Field visiting.—The majority of field visits observed were well planned and adequate instructions were given, although, in a few instances, better use might have been made of opportunities for teaching, with appropriate instruction or demonstration. On the whole, the nurses made very good contacts with families in their homes and appeared to have developed sound relationships.

Record-keeping.—The nurses keep daily reports from which a monthly report is compiled. A quarterly report of activities is sent to the Illinois Department of Public Health. Individual case records are kept for school children, venereal disease cases or contacts, for cases of acute communicable diseases, and for immunization, although no family record or family folder is used to consolidate information about all members of the same family. School health records are kept in the nurse's office and are transferred to the new school when children are transferred.

BOARD OF EDUCATION DISTRICTS NO. 75 AND 76 District 75 operates 9 elementary schools and employs 5 school nurses, 1 of whom is designated as supervisor. There are only 5 schools in District 76, and 2 nurses carry the school nursing service. The average case load for the nurses in District 75 is approximately 635 children; in District 76 it is somewhat larger, approximately 840 pupils. The case load in both schools is far less than the minimum enrollment of 2,000 per nurse commonly recommended as a criterion of adequacy.

All the nurses were certified as public health nurses in Illinois. All had had some academic preparation in public health nursing.

Four nurses in District 75 had had one year; the fifth and the two nurses employed in District 76 had had less than one year. The academic preparation which these two nurses had received was not recent; both had had more than twenty years' experience in various types of public health nursing.

The health rooms assigned to the nursing staff in all the 9 schools under District 75 and in 4 of the 5 schools under District 76 were fairly adequate, each one having handwashing facilities. Posters were used in the schools observed in both districts. In the schools observed in District 76 the nurses gave health instruction whenever the opportunity presented itself.

The activities of the nurses in both districts were similar to those carried by the health department nurses in the parochial schools. The percentages of time spent by the nurses in the two districts on various types of activity listed on the time-study sheets are tabulated below.

| <i>Types of Activity</i> | <i>Percentage of Total Working Period</i> | |
|------------------------------------|---|--------------------|
| | <i>District 75</i> | <i>District 76</i> |
| Office and clerical work | 27.3 | 11.4 |
| Telephoning | 7.5 | 10.0 |
| Caring for children in health room | 12.9 | 7.9 |
| Home visiting | 3.1 | 4.9 |
| Travel | 9.9 | 9.9 |
| Individual conferences (all types) | 6.1 | ... |
| Miscellaneous activities | ... | 40.2 |

During 1945 the following number of home visits and telephone calls were made: 2,256 home visits and 8,031 telephone calls in District 75; 1,199 home visits and 5,632 telephone calls in District 76.

Most of the time of the nurses in District 75 was given to clerical duties. In both districts the time spent on telephoning and on travel was considerable. Home visits were made to check on absent children, truant cases, and children with defects. A large majority of the visits made by the nurses in District 75 were with regard to absent children.

The amount of time spent by the school nurses on activities which nonprofessional personnel, such as clerks, janitors, and housekeepers, could have performed is discussed on pages 814-815.

Observations by members of the Chicago-Cook County Health Survey staff indicated that very friendly and co-operative relationships existed between the nurses and the principals and teachers of

the schools they served. The health records used by the nurses were filed in the nurses' offices and appeared to be adequate. In District 75 they were occasionally, but not always, transferred with the academic record when children were transferred to other schools. In District 76 this procedure was routine.

Much of the service responsibility of the supervisor of nurses in District 75 concerned truant cases; consequently, she had too little time to devote to the actual planning and supervision of the program. She also arranged the four and one-half week period of field experience in school nursing for two graduate nurses from the University of Chicago, during 1945.

EVANSTON TOWNSHIP HIGH SCHOOL DISTRICT 202 Three nurses, one of whom acts as the supervisor, provide the nursing service in the township high school. The supervising nurse has a master of science degree in public health. She is a member of the National Organization for Public Health Nursing, the American Public Health Association, and the National Education Association. She is also a certified public health nurse in Illinois. One of the staff nurses has a college degree, and the other has had some college work. Both staff nurses have had some academic preparation in public health nursing.

The nurse's health rooms consist of a suite of 8 rooms which include 1 examining room, 1 treatment room, 1 record room, 1 waiting room, and 4 rooms containing 18 beds available for student rest periods. However, the rooms are rather small and are rather crowded at times. Posters were used to good advantage.

In addition to the usual inspection activities, the nurses did classroom teaching and gave health advice to students. They held 2,629 individual health conferences during the school year 1945-46. No home visits were made, but the addition of this activity is planned for the next school year. The time-study sheets indicated that 25.6 percent of the total time of the three nurses was spent in office and clerical work, a very expensive method of providing clerical assistance as well as a hindrance to any real expansion of the school nursing program. The check lists showed that these high school nurses, like those employed in the elementary schools, also carried many housekeeping duties that might have been turned over to nonprofessional employees.

INFANT WELFARE SOCIETY (EVANSTON) The Infant Welfare Society, founded in 1919, is a voluntary agency financed through

contributions and fees collected for nursing services. The staff consists of a nursing director and three field nurses. The nursing program of the agency consists of health supervision and bedside care to infants over three weeks of age and preschool children attending, or eligible for admission to, the child welfare stations operated by the agency. Service to cases of acute communicable diseases is also included. All expectant mothers in homes visited by these nurses are referred to the Visiting Nurse Association of Evanston for follow-up, although health supervision is given to any postpartum patient and baby not carried by the Visiting Nurse Association during the antepartum period. Nurses also serve twice or three times weekly in the child welfare stations operated by the society. In addition, weekly visits are made to three nursery schools, and monthly visits to twelve baby boarding homes in the city.

The Infant Welfare Society nurses co-operate with the nurses of the Evanston Department of Health in an immunization program for children in the lower income group. The immunization procedure could be simplified for parents if children received the protective injections at the infant welfare stations at the time of their regular visits instead of being referred, as at present, to the health department immunization clinics.

Reports of the society, conferences with the director, and observations in the field indicate that the nursing staff provides a well-rounded program of health supervision for infants and preschool children. During 1945 a total of 394 infants under one year of age was admitted for health supervision at the child welfare stations, and 407 in the same age group received nursing supervision in the home through 1,201 home visits, which included 308 demonstrations of various types—formula, bath, preparation of food, nursing, and other necessary care. Thus, almost half the children under one year of age in Evanston received health instruction of some type, either in the home, or in the clinic, or in both places. This amount of service more than meets the ratio recommended¹ for this type of service when an infant mortality rate is as low as it is in Evanston (25.0 for 1945).

The time-study sheets showed that the nurses spent 24.9 percent of their time in home visiting and 21 percent in clinic service, excluding time spent on clerical work and interviewing. Approxi-

¹Ira V. Hiscock. *Community Health Organization*, New York, The Commonwealth Fund, 1939, p. 135.

mately one sixth of the home-visiting time was devoted to instructions or demonstrations concerned with nutrition.

Record-keeping.—Nurses write all information about their patients on individual records, which are filed in a family folder, thus making complete data on each family unit readily available. They keep daily reports of nursing activities, which are compiled into monthly and annual reports. The society is very much interested in evaluating the results of nursing activities and has instituted a systematic method by which this can, to some extent, be ascertained. Each nurse records her activities in a book of accomplishments which is tabulated monthly in the agency's central office.

VISITING NURSE ASSOCIATION OF EVANSTON The Visiting Nurse Association, founded in 1897, is a voluntary agency supported by contributions, fees collected for nursing services, and the local community chest. The staff consists of a director, one supervisor, and nine field nurses. The director and supervisor are both certified public health nurses in Illinois. One has a degree and the other one year of academic preparation in public health nursing. Three of the nine nurses on the staff have had one year of academic preparation in public health nursing, while five have had one semester or less. Three of the nurses have had special orthopedic training and are licensed physical therapists. The agency requires, in addition to high school graduation, state registration, one year of public health nursing experience, membership in the American Nurses' Association and in the National Organization for Public Health Nursing, and certification as a public health nurse in Illinois or pursuit of courses of study which will apply toward the certificate. Membership in the American Public Health Association is recommended, but not required.

Nursing program.—Bedside care is the principal activity, although some health instruction and demonstration is given in the home. Included in this is the service rendered to policy holders of the John Hancock and Metropolitan Life Insurance Companies in Evanston and the North Shore suburbs. Services in the program are rendered to antepartum and postpartum patients, newborn infants up to three weeks of age, cases of acute communicable disease, and orthopedic cases. In addition, nurses teach classes of mothers, provide service in the obstetrical clinic at Evanston Hospital, give orthopedic service, including physical therapy, in one of the public schools and

at the agency office, supervise four large nursery schools, and teach and supervise affiliating graduate and undergraduate students who come to the agency for field experience.

The orthopedic nursing service, including physical therapy treatments, constitutes approximately one quarter of the volume of nursing visits for the year. In addition to the treatments given in homes and at the office of the Visiting Nurse Association by the staff nurses, a nurse physical therapist, assigned to the orthopedic room at the Haven school, gives treatments to school children and to others who come there for treatments. The North Shore Association for the Crippled pays the salary of two nurse physical therapists on the staff of the Visiting Nurse Association. Observation in the field by the survey staff indicated that the orthopedic nursing services rendered by the staff were well organized and skillfully executed.

During 1945 the nurses made a total of 18,542 visits of the following types: maternal, 1,994; newborn, 867; crippled children, 5,378; communicable diseases, 541; nursery school children (preschool), 519; general service, 8,680 (surgical, 666, respiratory, 797, cancer, 962; circulatory, 2,003; nervous, 983; chronic, 1,477; glandular, 384; accidents, 435; digestive, skin, blood, genitourinary, sensory, and others, 973); nonclassified adults, 117; not home and unable to locate, 446. In addition, the nurses held 78 classes for mothers, at which there was a total attendance of 589 antepartum patients, gave several talks before local groups, and participated in several radio talks. During 1945, 98 percent of the expectant mothers were under supervision, 24 percent in clinics and 74 percent under private physicians, an exceptionally good record.

Analysis of the activities listed indicates that a great many fall into the classification of nursing care for chronic or long-term illnesses, no doubt because facilities for care of this type in convalescent homes or hospitals are far too limited, not only in Evanston but also in all parts of Cook County.

In general, the case load of the staff is fairly heavy, and nurses have little time to devote to teaching or demonstrations in the homes. In a little more than half the visits observed by the survey staff, nurses did not take advantage of teaching opportunities presented during the visit, although actual nursing care was done very efficiently and with considerable skill.

Record-keeping.—The nurses use the system of records—indi-

vidual case records and nurses' daily reports—prepared by the National Organization for Public Health Nursing. Patients' records are kept in a family folder.

RECOMMENDED CONSOLIDATION OF NURSING SERVICES IN EVANSTON Two agencies—a reorganized nursing service within the health department and a “community nursing service association,” to be established—should render all the nursing service in Evanston. The health department service would include nursing activities in respect to acute communicable diseases, school nursing services in the public elementary schools, as well as in the parochial schools, and tuberculosis control. The new community nursing association would amalgamate the services of the Infant Welfare Society and the Visiting Nurse Association. The proposed agency programs included in the recommendations at the end of this chapter are interdependent and should be planned co-operatively to ensure definite agreement on the division of responsibility for the various nursing activities. As time passes and the programs of the two proposed agencies become more closely co-ordinated, an eventual combination of all nursing activities in Evanston should be possible.²

One of the first steps necessary is the organization of an advisory committee on nursing under the auspices of the Health Division of the Evanston Council of Social Agencies. This committee would serve as a community nursing council in planning for the nursing needs of the community. The membership in this committee should include representatives of the various governing boards of nursing agencies, both official and nonofficial, boards of education, representatives of other citizen groups and interests, and the professional administrative directors of the various nursing services. This advisory committee on nursing should as soon as possible become associated with the Chicago Council on Community Nursing so that the program of each may be strengthened through co-ordination of purposes.

PUBLIC HEALTH NURSING IN OAK PARK AND RIVER FOREST

Oak Park, with a population in 1940 of approximately sixty-six thousand, and River Forest, with around nine thousand, are adjacent villages closely allied in both community and business life. They conduct a joint community chest drive and also share the public

² National Organization for Public Health Nursing (Special Committee), “Desirable Organization of Public Health Nursing for Family Service,” *Public Health Nurse*, XXXVIII (August, 1946), 387-389.

health nursing services provided by six different agencies. In addition, each community has public health nursing services available specifically for its own area. The Cook County Department of Public Health carries some responsibility in the two communities for communicable disease control and the inspection of hospital maternity services. The nine agencies (exclusive of the Cook County Department of Public Health) employ 13 nurses for full time and 3 on a half-time basis, or the equivalent of $14\frac{1}{2}$ nurses. The distribution of these nurses by agency is as follows: Oak Park Health Department, 3; Oak Park School District 97, 4; Oak Park-River Forest High School District 200, 1; River Forest School District 90, 1; Family Welfare Association of Oak Park, 2; Infant Welfare Society (Oak Park Center), $1\frac{1}{2}$; Metropolitan Life Insurance Company, $\frac{1}{2}$;³ John Hancock Life Insurance Company, $\frac{1}{2}$;⁴ Tuberculosis Institute of Chicago and Cook County, 1.

The nine agencies providing nursing service to these two communities represent more than twice the number of agencies at present rendering public health nursing services in the entire city of Chicago. Most of the programs are specialized, and several agencies may provide the same type of service, as the following outline indicates.

| | |
|---|---|
| Maternal, infant, and preschool care | Infant Welfare Society (maternal care limited) |
| | Family Welfare Association of Oak Park |
| | Metropolitan Life Insurance Company (policy holders only) |
| | John Hancock Life Insurance Company (maternal care only, limited to policy holders) |
| School health services | Tuberculosis Institute of Chicago and Cook County |
| | Oak Park-River Forest High School District 200 |
| | River Forest School District 90 |
| | Oak Park School District 97 |
| | Oak Park Health Department (parochial schools only) |
| Communicable disease control | Metropolitan Life Insurance Company (policy holders only) |
| | River Forest School District 90 |
| | Oak Park Health Department |

³ Service to policy holders.

⁴ *Ibid.*

| | |
|-------------------------------|---|
| Tuberculosis control | Tuberculosis Institute of Chicago and Cook County |
| | Family Welfare Association |
| | Infant Welfare Society (demonstration only) |
| Bedside nursing care | Metropolitan Life Insurance Company |
| | John Hancock Life Insurance Company (service to policy holders only by both companies) |
| Services to crippled children | Family Welfare Association |
| | Oak Park Health Department (some) |

No one agency is taking the responsibility for follow-up or case-finding in connection with venereal disease or the care of the chronically ill. Neither is any one agency co-ordinating the school health programs in the various schools or the immunization programs against smallpox and diphtheria. Even if the service were generalized, including bedside care, more than twice as many public health nurses would be needed in these two communities to reach the ratio of 1 public health nurse to 2,000 population. As in Evanston, there should be co-ordination and consolidation of the separate nursing services. A summary of the changes which should be made, similar to those proposed for Evanston, will be presented after the activities of eight of the nine agencies have been described briefly.⁵

OAK PARK HEALTH DEPARTMENT One supervising nurse and two staff nurses work under the direction of the part-time health officer of Oak Park. They operate on a specialized basis. Each nurse has secured her public health nursing state certification and has had one semester or more of academic preparation in public health nursing.

The nurses operate on a specialized basis. One nurse is classed as a quarantine officer and covers the communicable disease visits. The supervisor and one other nurse carry on the school nursing program. The supervisor, who is listed on the pay roll as Director of Health and Education, has been instrumental in building up an excellent school health program. She has also the responsibility of the inspection of beauty shops and the maternity departments of the two local hospitals.

The number of visits to cases where there is communicable disease is more than twice the number recommended as sufficient to render

⁵ The service provided by the single school nurse employed by River Forest School District 90 was not observed.

safe care. These visits should be analyzed to determine the type of case on which unnecessary emphasis is placed.

OAK PARK-RIVER FOREST HIGH SCHOOL DISTRICT 200 The board of education of this high school employs one nurse to serve as a health advisor. Approximately 43 percent of her time is spent in individual office conferences with pupils, 24.7 percent in telephoning regarding absentees or to community agencies, and 20.5 percent in clerical and office work. No home visits were made during the survey period, and few are made during the entire year, according to the information gathered.

The activity check sheet filled out by this nurse indicates that she, like nurses in the other schools observed, is responsible for work which could well be done by either the clerical or the housekeeping personnel or, perhaps, even by an upper-grade pupil. If she were freed from these activities, she could place more emphasis on individual teacher conferences for the purpose of conducting an instructive program of health information, publicity, and health education activities and on group conferences and meetings. When the school nursing program of the health department has been expanded and reorganized so that good medical and nursing guidance are available to the high school, the responsibility for nursing service in School District 200 should be transferred to the health department.

OAK PARK ELEMENTARY SCHOOL DISTRICT 97 Four nurses carry on the specialized school nursing program in the elementary schools which compose School District 97. The program for each school is different, according to the plans and wishes of the four nurses. No over-all planning and direction is given to their activities, and no one nurse has been given the responsibility for co-ordinating the four programs. Two of the four nurses were observed by members of the survey staff, and both appeared to need considerable assistance in planning their programs. One was in need of instruction in the simple fundamentals of personal relationships with the teaching personnel of the school.

The case load of slightly more than 1,000 pupils carried by each nurse is approximately half the 2,000 per nurse recommended as desirable in a specialized school nursing program. With such a small case load, it should be possible to carry on an almost ideal school nursing program, provided it is carefully planned and co-ordinated with all other school activities.

The nurses performed the routine activities described for other

schools. As in the other schools, many of their activities might have been performed by nonprofessional personnel. According to the time study, 1.4 percent of the nursing time was spent in home visiting, 23.1 percent in individual service to pupils in the health room, 12.1 percent in telephoning, 13.3 percent in office and clerical work, 6.6 percent in traveling, and 17.5 percent in individual and group conferences.

FAMILY WELFARE ASSOCIATION OF OAK PARK The Family Welfare Association of Oak Park is a voluntary organization supported by contributions, fees for service, and the Oak Park and River Forest Community Chest. The association provides in addition to its case-work activities, a nursing service carried by two public health nurses, one of whom is designated the nurse in charge. Both these nurses have excellent public health nursing qualifications. The nurse in charge has a B.S. degree in public health nursing, while the other nurse had had a year of academic public health nursing preparation. Both have been certified by the state as public health nurses.

The nursing program includes bedside nursing care to adults and health instruction and demonstration in connection with maternal and child health, services to crippled children, and communicable diseases. During the four-week time-study period, only 38.2 percent of the total nursing time was devoted to home visits. Almost three fourths of these visits were made to adults (72 percent), a considerable proportion (about two thirds) for bedside nursing care. Travel consumed 17.4 percent of the nurses' time; office and clerical work, 13 percent; and individual and group conferences, 14.5 percent.

INFANT WELFARE SOCIETY (OAK PARK CENTER) This voluntary organization is supported by contributions from the Oak Park and River Forest Community Chest and from private sources. The nursing service is provided by one full-time public health nurse and one part-time graduate registered nurse. The full-time public health nurse on the staff had had one year of academic preparation in public health nursing, while the part-time graduate nurse had had no special preparation.

Both nurses assist in the operation of the clinic program and make home visits to children registered in the agency's clinics. Clinic nursing service is given in two infant welfare stations and three preschool stations each month and in one monthly immunization clinic.

The field nursing program consists of health instruction by the public health nurse and demonstrations for the newborn, infants,

and preschool children by the graduate nurse. Bedside nursing care is given for demonstration purposes only. During the four-week time study 30.8 percent of the time of the two nurses was spent in home visiting, and 26.4 percent in clinic service. Approximately 80 percent of the home visits were made to infants over one month of age and only about 10 percent to newborn infants. Since most public health authorities place considerable emphasis upon the necessity for more frequent visiting during the first month of life, this percentage seems quite low. Although on practically all the home visits the nurses gave some type of demonstration to the mother to aid her in the care of the infant, the majority of the visits were made after the baby was a month old.

Travel took up 15 percent of the nurses' time, office and clerical work, 11.5 percent, and individual and group conferences, 7.1 percent. Little emphasis appeared to be placed upon instruction to the parent during the time-study period, since only two tenths of one percent of the nursing time was allocated to this activity. However, the clinic nurses observed by members of the Chicago-Cook County Health Survey staff explained and clarified for parents the orders or instructions given by the physician.

LIFE INSURANCE COMPANY SERVICES TO POLICY HOLDERS The Metropolitan Life Insurance Company provides one full-time nurse for home nursing services to its policy holders in Oak Park, River Forest, and Forest Park, or approximately one half to two thirds of one nurse's time to service in Oak Park and River Forest. According to figures obtained from the survey of public health nursing made by the National Organization for Public Health Nursing, the John Hancock Life Insurance Company estimates that somewhat less than half the time of one nurse is used in this area. It is probable that should the new community nursing service recommended for this area be organized these two companies might contract with the new agency to provide service to their policy holders.

TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY One nurse is assigned almost full time by the Tuberculosis Institute to serve in Oak Park and River Forest. She is responsible for all phases of health service in families with a diagnosed case of tuberculosis and also carries a school nursing program for a parochial school in River Forest. If the proposed new community nursing service is organized, the work now carried by this nurse should be transferred to the new agency. Eventually, when a well-organized, full-time health

department is established, the tuberculosis nursing service should become the responsibility of the health department nurses.

RECOMMENDED CONSOLIDATION OF PUBLIC HEALTH NURSING SERVICES IN OAK PARK AND RIVER FOREST The suggestions for Oak Park are similar to those made for Evanston. The nursing service now provided under the direction of the part-time health officer should be reorganized under a full-time health department. A community nursing service should be established to amalgamate the services of the five voluntary agencies now active in Oak Park and River Forest. There should be eventual co-ordination of the services of these two agencies into one over-all nursing agency which would provide all types of nursing service. As in Evanston, the first step should be the organization of an advisory committee on nursing under the auspices of the Oak Park and River Forest Planning Committee.

PUBLIC HEALTH NURSING IN OTHER COOK COUNTY COMMUNITIES

Public health nursing services, supported in most cases by tax funds, are provided in each of the following nine communities: Berwyn, Cicero, Elmwood Park, La Grange, Maywood, Skokie, Stickney, Western Springs, and Wilmette.

BERWYN The Berwyn Health Department employs two full-time nurses, who conduct a school nursing program in both public and parochial schools, activities in relation to communicable disease control, and a restricted nursing program in maternal and child health. The nurses also assist in the immunization, infant, and pre-school clinics, which are held in the health department building. The majority of nursing activities are concerned with the school health program.

CICERO One supervisor and three staff nurses carry the public health nursing services of the Cicero Health Department. The supervisor spends so much of her time in communicable-disease-control activities that little time is left for supervision. One of the staff nurses is assigned full time to the infant and preschool clinic program; the other two are responsible for the parochial school program. Very few home visits are made except to school children and in connection with communicable disease control.

The three staff nurses are paid on the basis of eleven months of service, and the supervisor on a twelve-month basis. Each nurse has a two-week vacation with pay.

ELMWOOD PARK One public health nurse employed by the village of Elmwood Park gives nursing service in the infant and preschool clinic and carries the school nursing program in the two public schools. She makes home visits to expectant mothers, tuberculosis cases or contacts, and occasionally to newborn infants, postpartum cases, and school children. In addition, the nurse assists with activities connected with the summer round-up program for preschool children who are to enter school in the fall.

LA GRANGE One full-time public health nurse is employed by the La Grange Community Nurse and Service Organization, a voluntary agency supported by contributions, fees for nursing service, the La Grange Community Chest, and rental income. Her program covers nursing services in connection with prenatal, postnatal, and infant health, acute communicable disease control, tuberculosis control, the crippled children's program, and some bedside care to chronically ill persons. She also serves in an infant and preschool clinic approximately twice a month.

The activities of the nursing program are under the direct supervision of the Cook County Department of Public Health, the field supervisor of the nearest field station assisting the nurse in planning her program. The comprehensiveness of the program is due to a great extent to this supervisory assistance.

MAYWOOD The village of Maywood has one part-time public health nurse to conduct its nursing program. Her activities consist chiefly of visits to cases of communicable disease, sanitary inspection of stores, restaurants, soda fountains, and other places, and the investigation of complaints about infractions of the sanitary code. Few except emergency visits are made to expectant mothers, infants, and preschool children.

The Public Welfare Organization of Maywood operates a weekly infant clinic and monthly preschool and immunization clinics. The village health authorities pay for medical service. A trained social worker, who is also a trained nurse, and one lay person volunteer their services. A part-time paid attendant assists at the weekly infant clinic.

SKOKIE The health authorities of Skokie employ one public health nurse who serves in the infant and preschool clinics and renders a school nursing service in one parochial and four public schools. She also gives service in a day school for preschool children. Home visits are made to cases of communicable disease, including tuber-

culosis, and to crippled children, school children, and orthopedic cases. In addition, some instruction in nutrition is given when needed. The Cook County Department of Public Health provides nursing supervision.

STICKNEY The newly organized health department authorized by law during the spring election of 1946 in Stickney has as yet no medical officer. The two nurses previously employed by Stickney Township are still on duty, but, according to information secured from the township supervisor in charge of administrative details, the health officer will select a new staff as soon as he is appointed.

WESTERN SPRINGS Western Springs has a public health nurse officially appointed as community nurse and health officer by the village officials. She is employed partly by the board of education, partly by the village through its lay board of health, and partly by the Western Springs Community Chest. Her activities consist of school nursing in one parochial school and three public schools, together with a generalized field program which covers prenatal, postnatal, infant, preschool, school, and adult nursing service, communicable disease control, including tuberculosis, and some instruction in nutrition and immunization. Bedside nursing care is given when necessary. The Cook County Department of Public Health provides advisory services, and the nurse sends regular reports to the department for tabulation.

WILMETTE The Wilmette Health Department employs one public health nurse whose service covers mainly communicable disease control and school nursing for the parochial school. Although she is a conscientious worker and is trying to do a good job, she is handicapped by lack of supervisory assistance and by the restricted program, over which she has no control.

The Wilmette Health Center is a voluntary agency financed chiefly by contributions, fees for services, the Wilmette Community Chest Association, village tax funds, and money raised by the Women's Club of Wilmette. The one nurse employed carries on a maternal and child welfare program in the field as well as in the clinic, including limited bedside care. She also gives nursing service in the dental and eye clinics. The bedside care program encroaches upon the preventive aspects of her services, and she cannot make nursing visits to infants and preschool children as frequently as would be desirable.

WINNETKA The nursing staff of the Winnetka Health Depart-

ment consists of four public health nurses who work under the supervision of the health commissioner. Emphasis is placed largely on the school nursing program. Two nurses confine their activities to school nursing. The other two combine school work with services in a weekly infant clinic. Home visiting is rather limited and consists of visits to school children in relation to communicable disease control and a restricted program for infants and preschool children.

COMMUNICABLE DISEASE NURSING

The preceding sections of this chapter have brought out clearly the number and variety of official and voluntary agencies which are concerned to a greater or less extent with the nursing program in connection with acute communicable disease control in Cook County outside Chicago. In four voluntary agencies communicable disease control activities are merely incidental to bedside nursing programs. Control activities are carried chiefly by the Cook County Department of Public Health, the Tuberculosis Institute of Chicago and Cook County, nine health departments or health services under the control of a village or a town, one community nursing service, and one voluntary agency. In addition to the services rendered by the public health nurses from these agencies, nurses employed by the twenty-two departments of education contribute to the preventive side of the program by promoting immunization procedures, by teaching methods of early detection and isolation of children with suspicious symptoms which might indicate a communicable disease, and by excluding children with suspicious symptoms from school.

Nurses in the majority of the thirteen agencies make routine home visits to both major and minor acute communicable diseases (including chickenpox and mumps) for the purpose of establishing quarantine and/or giving instructions regarding isolation procedures. Nurses in twelve of the thirteen agencies make home visits to cases of major contagion, and in ten of the thirteen agencies to minor contagious cases.

In Winnetka, with the exception of an occasional nursing visit, all cases of communicable disease, major and minor, are visited only by the health officer.

In Wilmette and Evanston instruction regarding minor communicable diseases is given almost entirely by telephone, unless there is some special reason for making a home visit. Co-operative relationships between the community agencies in Evanston enable the

health department to accept the reports from certain nursing visits made by nurses from other agencies, thus avoiding duplication of service.

The abbreviated records kept by nurses in most agencies make it very difficult, sometimes impossible, to ascertain where the patient may have received his infection, what the nurse has advised or done, and whether or not quarantine has been effective in preventing susceptible contacts from contracting the disease.

A total of 16,434 nursing visits to the 8,002 communicable disease cases⁶ and their contacts in Cook County outside Chicago were reported during 1945, in addition to an unknown number made by health officers. This total more than meets the recommended standard of 16,016 visits, including those to patients having chickenpox or mumps.

The average number of nursing visits per case (including mumps and chickenpox) made during 1945 were as follows: Berwyn, 1.3; Cicero, 2.4; Evanston, 1.9; and Oak Park, 3.4; and the rest of Cook County (exclusive of Chicago), 2.5. More than the number of nursing visits recommended by Dr. Hiscock were made in Oak Park and Cook County and almost twice the recommended number in Oak Park. The average for Evanston would be much higher if the computation had been based on the number of cases actually visited instead of the total number reported (both major and minor), because many minor cases were not visited by the Evanston nurses. A considerable reduction in nursing visits in Cook County outside Chicago could be effected if the visits to children having chickenpox and mumps were limited to those made for bedside nursing or to secure epidemiological information in certain types of cases.

NURSING IN THE TUBERCULOSIS-CONTROL PROGRAM

The Cook County Department of Public Health and the Tuberculosis Institute of Chicago and Cook County carry the chief responsibility for the tuberculosis nursing service in Cook County, exclusive of Chicago, as part of their generalized nursing programs. The Tuberculosis Institute operates the tuberculosis clinics throughout the entire county and makes home nursing visits in the special areas covered by its public health nurses. The public health nurses of the Cook County Department of Public Health make home visits in the

⁶ Measles, whooping cough, meningitis, poliomyelitis, scarlet fever, diphtheria, and typhoid, 3,513; chickenpox and mumps, 4,489. Total: 8,002.

areas covered by its nursing service and assist in clinic nursing at one of the Tuberculosis Institute clinics. The small amount of clinic assistance and home visiting service contributed by the other agencies in the county was indicated in the descriptions of those agencies. The varying quality of the nursing services rendered by the nurses of the Tuberculosis Institute and the Cook County Department of Public Health, as well as the very uneconomical use of professional nursing time in the clinics, was also pointed out in earlier discussion.

During 1945, 11,612 nursing visits were made to homes in the Cook County area, which more than meets the standard recommended by Dr. Hiscock. An analysis of the content of nursing visits and of the clinic activities observed leads to the conclusion that although these services were adequate in quantity they were far from adequate in quality. Nurses are not well prepared in respect to tuberculosis. They need considerable assistance in regard to the specific content of patient teaching as well as an understanding of teaching methods. Nurses who work in the field of tuberculosis should be well informed not only about the disease itself but also about the allied fields of nutrition, mental hygiene, and health education.

Nursing supervision in tuberculosis is inadequate and was entirely lacking in one agency. As a result, the nursing program is generally disorganized and uneconomical.

NURSING IN THE VENEREAL-DISEASE PROGRAM

The Cook County Department of Public Health is responsible for the venereal disease program in Cook County outside Chicago, except in Evanston, where it is carried by the Evanston Department of Health. All the nurses of the Cook County Department of Public Health carry the venereal disease nursing services as a part of the family health service in their districts. Each nurse has had an inservice period of training in a venereal disease clinic. The nurses in both agencies provide clinic nursing services and make epidemiological investigations and follow-up visits in the field.

From the brief observations of the venereal disease clinic nursing service provided by the Cook County health department nurses, it was apparent that the nurses were hampered in their work by lack of space and facilities for private interviews with patients. The nursing techniques observed were good, and tray and treatment equipment were set up correctly. Opportunities for teaching, however, were not utilized to the best advantage, nor did they make the best

use of posters and pamphlets. The venereal disease services provided by the health department nurses in Evanston were observed only incidentally in connection with other visits.

During 1945, 1,686 home visits were made in behalf of venereal diseases in the county outside Chicago, 1,112 by the Cook County Department of Public Health, and 574 by the Evanston Department of Health. Syphilis cases reported for this area totaled 704 during 1945, 175 cases in Evanston, and 529 in the remainder of the county. Of the 390 reported cases of gonorrhea, 131 were in Evanston, and 259 in other parts of Cook County.

NURSING IN MATERNAL, INFANT, AND PRESCHOOL PROGRAMS

Fifteen different agencies are responsible for the public health maternal, infant, and preschool nursing programs in Cook County outside Chicago: the Cook County Department of Public Health, the Tuberculosis Institute of Chicago and Cook County, four other health departments, eight voluntary agencies, and one community nursing service partially supported by taxation. The health promotion phases of the program are carried chiefly by the two county-wide agencies, the infant welfare societies of Evanston and Oak Park, and the Family Welfare Association of Oak Park. Bedside care is provided by the Visiting Nurse Association of Evanston and the nursing service of the Metropolitan Life Insurance Company.

THE OVER-ALL PROGRAM In general, the over-all child welfare nursing programs, although unco-ordinated, are fairly comprehensive, with the exception of three important areas—preschool, prenatal clinic, and bedside nursing services. The quality of the nursing service leaves much to be desired. The amount of field service provided for expectant mothers, infants, and preschool children is definitely insufficient.

During 1945 the public health nurses in the fifteen agencies made 6,414 prenatal and postnatal visits, 939 infant visits, 4,421 preschool visits, and 6,403 visits to crippled children. On the basis of 12,472 deliveries for 1945, there should have been 14,966 field nursing visits made to these patients during the maternity cycle instead of the 6,414 visits actually made. The clinic nursing service to expectant mothers is extremely scanty; there is only one prenatal clinic in the entire county, the maternal hygiene clinic operated by the Cook County Department of Public Health at Robbins, Ill.

On the basis of 12,472 births in Cook County during 1945, 14,966

field nursing visits should have been made to infants instead of the 5,939 visits reported, less than half the service needed.

At least 27,030 field nursing visits should have been made to the 36,041 preschool population of the county, instead, only 4,421 nursing visits were reported for all the agencies in Cook County outside Chicago. Obviously, the nursing service which preschool children receive is entirely insufficient to assure an adequate service to this group.

BEDSIDE NURSING Except Evanston, Oak Park, and to some extent Wilmette, and the service rendered to individuals with John Hancock or Metropolitan Life Insurance Company policies, no routine over-all bedside nursing service is available in Cook County outside Chicago. The Evanston Visiting Nurse Association, however, conducts a specialized orthopedic service which covers several surrounding communities, and nurses of the various health agencies take care of necessary emergency cases. There is urgent need for postnatal bedside nursing care, both for the small number of mothers delivered at home and for care of children with acute or chronic illnesses who cannot or do not go to hospitals.

ORTHOPEDIC NURSING SERVICES During 1945 public health nursing service was furnished in 5 orthopedic clinic sessions of 7 hours each, scheduled and supervised by the Division of Services for Crippled Children of the University of Illinois. A total of 4,221 visits were made. Nursing service was also given in 7 speech and hearing clinic sessions of 2 hours each under the same auspices. A total of 2,436 clinic visits were made to these sessions. Nursing personnel from 3 of the health agencies assist at the orthopedic clinic sessions, and nurses from nearly all agencies assist by locating crippled children and making home visits to them. The type and quality of services rendered vary from community to community.

The extensive crippled children's services provided in Evanston by the Visiting Nurse Association of Evanston, including orthopedic service for children in three of the public schools, has been described.

SCHOOL NURSING PROGRAMS IN COOK COUNTY

School nursing services in Cook County outside Chicago are provided by 24 boards of education, 9 health departments or other official health services, 1 voluntary agency supported by both taxation and voluntary funds, and the Tuberculosis Institute of Chicago and Cook County. Nurses employed by the boards of education and by a

few of the small official health services render a specialized school nursing service. In the other agencies, school nursing is part of the generalized nursing program.

As Table 111 brings out, most of the school nursing service is provided by the boards of education, the health departments or other official health services, and by the Tuberculosis Institute.

TABLE 111. NUMBER OF SCHOOL NURSES, ENROLLMENT, CASE LOAD, TYPE OF SERVICE, BY AGENCY IN COOK COUNTY (EXCLUDING CHICAGO)

| <i>Agencies</i> | <i>Number Nurses Giving School Service</i> | <i>Total Number of Schools</i> | <i>Total Enrollment</i> | <i>Average Number of Schools per Nurse</i> | <i>Average Enrollment per Nurse</i> | <i>Type of Nursing Service</i> |
|--|--|--|-----------------------------|--|---|--|
| 16 boards of education (elementary) | 28 | 97 | 33,925 | 3.4 | 1,212 | Special |
| 8 boards of education (high school) | 11 | 8 | 23,882 | .7 | 2,171 | Special |
| Cook Co. Dept. of Public Health | 25 | 165 | 27,418 | 6.6 | 1,096 | General |
| 8 other official health agencies | 13 | 50 | 14,909 | 3.9 | 1,147 | Special & General |
| 1 combined service (supported by taxation and voluntary funds) | 1 | 4 | 870 | 4.0 | 870 | General |
| Tuberculosis Institute of Chicago and Cook County | 24 | 106 | 26,852 | 4.1 | 1,041 | General |
| Total | 102 | 430 | 127,856 | 4.2 | 1,253 | ... |

NURSING CASE LOAD In agencies in which the nurses carry school nursing as part of a generalized nursing program the case load is heavy. Dr. Hiscock estimates that a nurse in a well-balanced, generalized public health nursing service will carry not more than 250 to 300 school children in her case load. No agency in Cook County with a generalized public health nursing service even approaches this ideal.

Although the average number of schools carried by nurses of the Cook County Department of Public Health is 6.6, some nurses carry 10, 12, and even 16 small country schools. Serving a number of schools necessitates much more nursing time and effort than would appear from total enrollment figures alone, since each school requires separate over-all planning and travel time. With a school case load more than three times as large as it normally should be in relation to the number of nurses, it is not surprising that the program carried out by this agency, in general, fell somewhat short of what it should

have been. Several exceptionally fine school programs have been developed, however, by individual nurses who devoted a major part of their time and effort to school activities.

Board of education elementary school nurses carry an average of 1,212 school children, nearly 800 less than the recommended standard (2,000). This low case load should make possible an ideal school nursing program.

At the time of the Chicago-Cook County Health Survey, however, many desirable activities were not carried to any extent by the school nurses in the 93 schools under the 22 boards of education from which complete information was secured. To achieve a thoroughly satisfactory school nursing program it would be necessary to curtail some of the present nursing activities and to expand others.

HEALTH ROOM FACILITIES In order to secure maximum efficiency from the school nursing service, an adequately equipped health room for the nurse's use should be provided. It is essential that the room be conveniently located, have running water, and be sufficiently large to permit the testing of vision. The information secured during the survey showed that among schools served by the boards of education nurses, all but one high school had adequate health room facilities. Only 39 out of 100 elementary schools, however, had complete facilities. Twelve of the 61 inadequately supplied elementary schools lacked health room space. Inadequacies in the remaining 49 schools were summarized as follows:⁷ lack of privacy (sharing room with other school personnel), 15; no running water, 15; too small, 18; poor location or lack of equipment, 4.

The health room facilities provided in the various schools served by the Tuberculosis Institute of Chicago and Cook County, by health departments, and by community agencies were very good in some schools. In others they were either nonexistent or very poor, particularly in some of the parochial schools in which the health program has been established for only a relatively short time.

HOME VISITING Ideally, the purpose of home visiting by school nurses is to investigate patients under suspicion of having a communicable disease, to interpret to parents the results of physical examinations, to encourage the use of medical service by the family, and to encourage correct health habits in the home. Home visits to absentees unverified as to illness status and for truancy should be the responsibility of other individuals, not of nurses. Nurses from 6 of

⁷ In some schools more than one of the items listed were missing or inadequate.

the 16 school districts employing nurses make routine truancy calls, and nurses in 4 other districts make a few such home calls. Nurses from nine districts make routine absentee home visits. Nurses in only four districts make routine home visits to follow up pupils who need treatment for defects, although all nurses follow up those with serious or urgent defects. Observations in the field, however, indicate that the amount of actual home visiting entailed by this latter responsibility actually is very limited. In a specialized school nursing program, it is estimated that approximately one third of the elementary school nurse's time should be spent in home visiting.

During 1945 nurses from health agencies in Cook County made 14,130 home visits in behalf of school children, 7,709 made by the Tuberculosis Institute nurses and 6,421 by health department nurses. These totals are not divided as to type, although information secured during the survey indicated that home visits to cases suspected of communicable disease, to absentees, to children with defects, and a limited number to truants were made by most of the agencies. Boards of education totals were not included, since complete reports were not available from all districts.

According to recommended standards, 150 home visits should be made per 1,000 enrollment of elementary school children. The figures in Table 112 show that nurses from some agencies make many more visits than apparently are necessary, and some make too few.

HEALTH EDUCATION The nurse can exert a great influence upon the amount of health information given to the pupils in any school. She can supply accurate health facts through meetings or individual conferences to all teachers so that health information may be integrated into the general teaching program in all classes and health practices established in the schools. In addition, she can supply or encourage the making of posters, the writing of health pamphlets or articles, the initiation of health projects in various courses and similar activities. It is apparent from an analysis of activity schedule tabulations that school nurses are not participating in health education programs as much as might be expected, especially the nurses in the elementary schools, who have under the boards of education relatively light case loads.

OTHER NURSING ACTIVITIES IN THE SCHOOL The activities reported for school nurses are tabulated in Table 112. These tabulations show clearly that many are still carrying activities that might well be turned over to teachers. Testing vision or hearing, weighing

TABLE 112. TABULATION OF CERTAIN SELECTED SCHOOL ACTIVITIES IN COOK COUNTY EXCLUSIVE OF BOARDS OF EDUCATION (1945-46)^a

| Activities | Totals | Cook Co. Dept. of P. H. | Tuber- culosis Institute | Evanston Health Dept. | Oak Pk. Health Dept. | Other Health Depts. ^d |
|---|--------|-------------------------------|--------------------------------|-----------------------------|----------------------------|--|
| Enrollment represented | 60,404 | 18,653 ^b | 26,852 | 1,427 | 2,200 | 11,272 |
| Vision tests | 30,552 | 11,365 | 17,609 | 1,578 | c | c |
| Hearing tests | 15,872 | 9,171 | 6,693 | 8 | c | c |
| Dental inspection | 17,191 | 6,661 | 8,916 | 539 | 1,075 | c |
| Physical examination by doctor | 12,104 | 7,027 | 3,710 | 966 | 401 | c |
| Physical examination with parent present | 5,723 | 3,490 | 1,770 | 305 | 158 | c |
| Percent examined with parent present | 47.3 | 49.7 | 47.7 | 31.5 | 39.4 | c |
| Weighing and measuring | 29,184 | c | 27,801 | 1,383 | c | c |
| Home nursing visits | 14,130 | 2,362 | 7,709 | 400 | 749 | 2,910 |

^a These totals do not represent total activity in the county, since figures were not available from all schools.

^b Information available for only 132 of the 165 schools in which the total enrollment was 27,418.

^c Figures not available.

^d Complete figures available from only four of the six other health departments or village health services doing school work.

and measuring children, making morning inspections, and similar activities all afford splendid teaching opportunities for the teacher and should be engaged in by her as much as possible, so that they may become educational experiences for the child.

Analysis of the activity charts indicate that the nurses also engage in many housekeeping and clerical activities that might be delegated to other personnel, in some cases, to upper grade pupils. If the nursing activities in each school could be studied and some of them taken over by other personnel, the nursing time saved might be devoted to more productive lines of activity.

SUPERVISION In general, throughout the county, the school nurses receive very limited nursing supervision. The Evanston Department of Health, the Oak Park Health Department, the Cook County Department of Public Health, and Evanston School District 75 have each designated a supervisory staff to assist the nurses with their school nursing programs. The Tuberculosis Institute also has provided supervision, although heavy administrative responsibility in the central office limits the amount of field supervisory activity to an almost negligible amount. The rest of the nurses employed by the various agencies responsible for the school nursing program are unsupervised.

The need for supervision in public health nursing is very great,

and agencies are recognizing more and more that the efficiency of their nursing programs rests to a great extent upon the amount and quality of nursing supervision provided. The need for such supervision is probably increasing rather than decreasing, partly because the administration of public health nursing is becoming increasingly complex, and higher standards in public health are demanded, and partly because there are relatively few well-trained public health nurses with professional postgraduate work in public health. Analysis of the nursing activity sheets returned by the school nurses points clearly to the need for such supervisory assistance in the school nursing programs of many of the boards of education and other agencies providing a school nursing service. Some method should be worked out by which nurses in school health programs may receive the stimulation and guidance of more experienced individuals which they now need.

RECOMMENDATIONS FOR A PUBLIC HEALTH NURSING TEACHING CENTER

It was increasingly apparent as the nursing survey progressed that one of the major needs in the public health nursing field in Chicago was a well-planned generalized teaching center, where students enrolled in accredited university public health nursing programs of study, students taking basic nursing programs in schools of nursing, and both new and long-standing nursing personnel employed in the public health nursing agencies might secure adequate field experience.

At the time of the survey, no agency in the area had facilities adequate to establish such a center upon a generalized family service basis covering *all public health nursing services*, including field, clinic, and school. Public health nursing of the future, however, and, in some places, of the present regards complete family service as the responsibility of one nurse, whether she herself renders it or sees that the family secures such service by requesting others to assist in special situations for which she is not yet equipped.

Plans should be made toward the establishment and operation of such a teaching center in Chicago with the co-operation of all public health agencies in the community and the active participation of those organizations which can assist in facilitating the complete generalization of the nursing program, including bedside care if possible. The first step should be the organization of an advisory committee to work out the detailed plans for such a center with the assistance and advice of the Chicago Council on Community Nursing.

The membership of this committee should include representation from each service agency concerned, from the universities offering approved courses in public health nursing, from the Chicago League of Nursing Education, and from the Chicago Medical Society. The following recommendations have been outlined to serve as a guide toward the making of preliminary plans for such a center:

(1) The center shall be established to cover the same area as that of one of the health department districts recommended in Chapter 42 and preferably be under the guidance of the Nursing Bureau of the Chicago Health Department; if the Health Department is not prepared or is unable because of funds or other reasons to establish such a center, this responsibility be delegated to such private agency or agencies as the advisory committee may specify.

(2) The budget plan shall include provisions for appropriate contributions in personnel, service, or funds from all agencies which may desire to participate in the project and in accordance with the service to be received by each.

(3) The generalized nursing service in the teaching center, including school, tuberculosis, and bedside nursing care activities, shall be organized and administered on the theory that all service in the teaching area be given preferably by one organization or, at the most, by two agencies if bedside nursing care is given by a second agency.

(4) Such a center shall be under the direction of a competent and well-qualified director and staffed by qualified public health nurses, including supervisors, in order to carry on the teaching program at a level adequate to meet university standards, i.e., all staff nurses shall have had at least a year of academic work in public health nursing and at least a year of supervised field work, and supervisors shall meet the standards recommended by the National Organization for Public Health Nursing.

(5) Public health nursing supervisors assigned to the center shall assist in operating the teaching program; special consultants and the educational director shall be requested to give advisory and consultant service, and one of the supervisors shall be assigned to act as administrative supervisor for routine activities of the center.

(6) The advisory committee, in an effort to assist in securing qualified nursing personnel for this center, especially the educational director for the Chicago Health Department, shall request the Civil Service Commission to revise the classification of public health nurses

in accordance with the plan suggested in recommendations made for the Nursing Bureau of the Chicago Health Department.

(7) The ratio of nurses to population and supervisors to public health nurses shall exceed the usual recommended standards since nurses must carry smaller districts when responsible for teaching a student, and supervisors will have added responsibilities in respect to many of the activities of the teaching center.

GENERAL RECOMMENDATIONS FOR THE CHICAGO-COOK COUNTY AREA^a

SALARIES AND OTHER PERSONNEL POLICIES It is recommended that:

1. Salaries for public health and industrial nurses shall be raised to a level that will compare favorably with those paid in other sections of the country.

2. Adequate retirement provision shall be made for public health nurses in all the agencies of the area.

3. A five-day, forty-hour week for public health nurses shall be given a trial in those agencies which now have a longer working week, and the shorter work-week shall be adopted if proved satisfactory.

4. Provisions for sick leave with pay and, if possible, some provision for preventive sick leave shall be made for public health nursing personnel.

5. At least a four-week vacation with pay shall be provided for nurses after a year's service with an agency.

6. Pre-employment physical examinations, including X-rays, blood tests, and urinalysis examination, shall be required for each public health nurse before appointment and shall be repeated yearly.

7. More emphasis shall be placed upon staff education programs in those agencies which at present do little or nothing in this respect.

8. More opportunities for additional postgraduate work in public health nursing shall be afforded nurses through educational leaves and scholarships.

TIME STUDY DATA It is recommended that:

1. All agencies shall use the data in the various tables of the time study for self-evaluation of their individual nursing programs.

2. Further evaluation of the total nursing situation, based upon over-all community need, shall be made by the Chicago Council on

^aThe detailed recommendations accompanying the individual reports prepared about each agency and service surveyed have been condensed and, in some cases, consolidated to eliminate duplication.

Community Nursing and this group shall provide leadership in the resultant redistribution of nursing activities in the various agencies.

3. Special emphasis shall be placed upon the need for the redistribution of supervisory activities so that the staff nurses will receive more actual assistance.

INCREASED USE OF NONPROFESSIONAL PERSONNEL It is recommended that:

1. Additional nonprofessional personnel be used to relieve the nurses of the many nonnursing duties they now perform. This or a similar recommendation is made for maternal, infant, child welfare, tuberculosis, and venereal disease clinics in Chicago and Cook County, for school health services in Evanston, and for the voluntary agencies in Evanston and Oak Park-River Forest.

RECOMMENDATIONS FOR SPECIAL FIELDS OF NURSING

COMMUNICABLE DISEASE NURSING It is recommended that:

1. Public health nurses shall make communicable disease visits only where a need for nursing care is indicated.

2. These nurses shall be given sufficient instruction to become competent in giving the necessary instruction and demonstration for the care of the patient and management of the household in isolation or quarantine.

3. Nursing visits to children having mumps or chickenpox shall be reduced to a minimum and adults having chickenpox shall be visited by an epidemiologist for the purpose of differential diagnosis rather than by the public health nurse.

4. More complete records shall be made of nurses' visits to cases of communicable disease and the system of recording shall be uniform throughout the city and the county.

5. Investigation of cases of communicable disease by telephone shall be reduced to a minimum, since the most effective teaching can be accomplished only through direct contact.

6. The agencies in communities with an unusually high number of visits per case analyze the nursing visits in order to eliminate all unnecessary visits.

MATERNAL, INFANT, AND PRESCHOOL NURSING SERVICES *Chicago and Cook County.*—It is recommended that:

1. Increased emphasis shall be given to the locating of prospective mothers early in pregnancy.

2. The teaching content of visits to expectant mothers, infants,

and preschool children shall be improved and sufficient time shall be taken by nurses to give adequate instruction accompanied by demonstration as necessary.

3. Nursing time released by the transfer of nonnursing duties to nonprofessional personnel be utilized for expanding the teaching programs in clinics and homes.

4. Staff education programs shall be provided to increase the nurses' knowledge of practical nutrition to enable them to give more complete instructions and suggestions regarding food substitution and preparation to patients in the clinics and in their homes.

5. More extensive use shall be made of literature, posters, displays, motion pictures, and group classes or instruction in clinics.

6. More emphasis shall be placed on the importance of practical demonstrations of points being taught in the home.

7. More emphasis shall be placed on the teaching of Red Cross home hygiene and nursing classes so that increased numbers of mothers will be equipped to care for illnesses when they occur and to prevent their occurrence through an understanding of healthful living. Each public health nurse's responsibility in this expansion will consist largely of assisting in the recruitment of qualified nurses to teach and develop these courses and of stimulating the organization of classes in her community.

8. Increased emphasis shall be given to the mental hygiene phases of the nursing program and definite plans shall be made for the inclusion of this topic in the staff education program. Nurses working alone should familiarize themselves with recent books and literature in which will be found material on this subject, and should seek opportunities for participation in staff education programs.

9. The preschool nursing program shall be developed more fully and increased stress shall be placed on nursing instruction for children in this group.

Chicago.—It is recommended that:

1. Home visiting by health department nurses shall be organized so that nurses may use their nursing skills in bedside care, home demonstrations, and health teaching, including immunization.

2. In the interests of efficiency, nurses of the Chicago Health Department shall make all follow-up field visits (except for delivery service) to prenatal patients attending the Stock Yards Dispensary of the Chicago Lying-in Hospital and the clinic at the Chicago Maternity Center.

3. An orthopedic field nursing program for care other than bedside care shall be developed in the Chicago Health Department and the Infant Welfare Society of Chicago in co-operation with the Division of Services for Crippled Children of the University of Illinois.

Cook County (exclusive of Chicago).—It is recommended that:

1. A nursing program for the care of premature infants shall be developed by the Division of Nursing of the Cook County Department of Public Health.

2. Increased emphasis shall be placed on early field nursing supervision of the newborn infant during the first month of life.

3. The orthopedic field nursing program carried by the various agencies in the county shall be co-ordinated more fully through the assistance of the Division of Services for Crippled Children of the University of Illinois and the Cook County Department of Public Health in respect to follow-up procedures, nursing instruction or care, and the use of uniform records.

SCHOOL NURSING SERVICE Chicago.—It is recommended that:

1. A school nursing service for elementary schools in Chicago shall be re-established under the supervision of the health department and that plans shall be made for the inclusion of service to high schools at a later date.

2. The partial school nursing services now carried by different agencies shall be consolidated under the health department so that only one agency operates in any one school.

3. Nurses assigned to the physical improvement rooms in the schools shall concentrate their efforts on the health problems of the children and that the procedures of weighing and measuring shall be transferred to the teachers to enable them to take advantage of the teaching opportunities afforded by these activities.

Cook County (exclusive of Chicago).—It is recommended that:

1. In the elementary schools, nursing service shall be provided as part of a generalized nursing service.

2. Adequate physical facilities shall be made available for the nursing service in the school where these are not provided.

3. Increased emphasis shall be placed upon the home follow-up of elementary school children.

4. The Cook County Department of Public Health, as its staff permits, shall reduce the school case load of its nurses and shall outline a definite program which will be possible of efficient achievement.

5. A school nursing consultant, properly qualified by training and experience, shall be placed on the staff of the Cook County Department of Public Health so that requests for consultant assistance may be met adequately.

6. Inasmuch as nurses employed in elementary schools by boards of education carry only a little more than half a normal case load, their school health services shall be expanded to permit more home visiting, more consultation with teachers, more program planning with school administrators, and more parent-teacher conferences.

7. Teachers shall be encouraged to accept increased responsibilities in respect to health procedures which afford teaching opportunities.

8. Certain standard reference books in public health nursing and school nursing shall be supplied the nurse in each school district.

9. Efforts shall be made to secure standing orders for all school nurses who do not now have them.

10. Home visits to absentees shall be made by personnel other than the nurse, except where illness has been verified.

11. Transportation of supplies and of pupils by the nurse shall be kept at a minimum.

12. Health agencies and boards of education providing school nursing service, but lacking supervisory personnel, shall utilize the special school nursing consultant service which has been recommended for the Cook County Department of Public Health.

TUBERCULOSIS NURSING SERVICE *Chicago*.—It is recommended that:

1. The tuberculosis nursing service shall be rendered part of a generalized nursing service under the direction of the reorganized nursing division of the Chicago Health Department.

2. Immediate steps shall be taken to improve nursing techniques, and the importance of teaching by example shall be stressed.

3. Whether nursing services are provided under a generalized or a specialized system, a staff education program shall be initiated that includes not only an understanding of the disease processes of tuberculosis but also some information on personal and environmental hygiene, nutrition, mental hygiene, and health education.

4. Tuberculosis nursing visits shall be made on the basis of patients' needs, rather than, as under the present system, to coincide generally with the dates for the collection of sputum. Fewer and more adequate home visits would result, provided the recommended staff-education program were initiated.

5. A system of sputum collection shall be instituted which will make it unnecessary to use nurses as collecting agents. This change in procedure can be carried out if nurses effectively explain to patients at the clinics and in their homes how necessary sputum examinations are.

6. A general manual of nursing regulations, instructions, and procedures shall be provided for the use of the nursing staff, the writing of this manual to be under the supervision of a qualified public health nursing director or nursing consultant.

7. Adequate nursing administrative and supervisory guidance shall be provided the nursing staff rendering the tuberculosis nursing service.

8. Tuberculosis nurses assigned to the physical improvement rooms in the schools shall concentrate their efforts on the health problems of the children rather than on the procedures of weighing and measuring, the latter program to be the responsibility of the teaching staff of the schools because of the teaching opportunities it affords.

9. Nurses from a single organization shall render the school service in any one school.

10. Nurses in the Tice Clinic shall generalize their services so that each of the five nurses concerned makes all the various types of nursing visits in the field, and that if and when the general staff have had the advantages of a concentrated staff-education program these field visits shall be assigned to the nurse in whose district the patient lives.

11. A limited number of nurses and supervisors shall be encouraged and assisted by leave of absence with pay to take postgraduate work in public health nursing, including work in tuberculosis nursing.

12. An intensive inservice training program for all nurses who give tuberculosis service shall be planned and placed in operation at the earliest possible moment.

13. Only one nurse shall be assigned to the Mobile Photofluorographic Unit.

Cook County (exclusive of Chicago).—

1. The tuberculosis nursing service, except in the municipalities of Evanston and Oak Park, shall be rendered part of the generalized nursing service of the reorganized nursing division of the Cook County Department of Public Health. This service in Evanston should be carried on as part of the nursing service of the Evanston

Department of Health, and in Oak Park, should be carried temporarily by the recommended Community Nursing Service Organization, and eventually transferred to health department supervision when qualified full-time medical and nursing direction is available in that agency.

2. A more adequate system of delivery of equipment and supplies shall be worked out so that nurses need not transport supplies and equipment from one location to another when their plans for the day do not include traveling in the particular territory concerned.

3. Adequate nursing supervision shall be provided, whether the service be rendered as a specialty or as part of a generalized nursing program.

4. Uniform family records shall be developed in the field service.

5. An improved system of advising the field nurse as to clinic findings and recommendations shall be worked out.

VENEREAL DISEASE NURSING SERVICE *Chicago*.—It is recommended that:

1. Public health nurses in all the venereal disease clinics shall be trained to share the responsibilities of interviewing and giving instructions to patients and contacts.

2. The administration of the generalization of the clinic program shall be organized in such a way that rotation of personnel necessary for this generalization allows longer intervals for key personnel than for others, in order not to jeopardize the smooth operation of clinics.

3. Public health nurses from the proposed Bureau of Public Health Nursing of the Chicago Health Department shall have an opportunity to participate in the nursing program of the Chicago Intensive Treatment Center, with emphasis on interviewing patients, including the educational phases.

4. Well-trained public health nurses shall be assigned to the Chicago Intensive Treatment Center to orient public health nurses in the educational and case-finding activities with the patients and to act as liaison nurses between the nursing bureau of the health department and the venereal disease control officer.

5. When the size of the nursing staff permits and when necessary preparation is given the field nurses, the nursing staff shall gradually assume responsibility for all cases in the family.

Cook County (exclusive of Chicago).—1. More information concerning venereal diseases and the important points in the nursing program shall be outlined and included in the staff education program.

2. More emphasis shall be placed upon the follow-up of babies born of syphilitic mothers so that they may receive attention during the first month of life.

3. Improved clinic space shall be provided, to give more privacy for interviews and more opportunity for teaching and interviewing.

INDUSTRIAL NURSING

It is recommended that:

1. Industrial nursing services shall be developed and made available to small plants on a part-time basis by the Visiting Nurse Association of Chicago and the Cook County Department of Public Health as soon as qualified personnel are available.

2. Emphasis shall be placed upon a direct health service to the worker eliminating nonnursing activities which interfere with this program.

3. Increased emphasis shall be placed upon the health education activities of the industrial nurse as they relate to individual and group conferences, preparation of publicity material, and use of health materials, such as posters, pamphlets, and motion pictures.

4. More extensive use shall be made of the available health facilities existing in the community.

5. In the interest of improvement of industrial nursing services to industry, "leave of absence" for educational purposes shall be encouraged, and nurses shall be allowed to attend professional meetings and institutes.

6. Nursing agencies providing industrial nursing services shall take greater advantage of the consultation service of the Division of Industrial Hygiene of the Illinois Department of Public Health.

7. Plants now employing or expecting to employ industrial nurses and not having or expecting to have facilities for nursing supervision shall take advantage of the consultant and advisory nursing services of the Division of Industrial Hygiene of the Illinois Department of Public Health.

CHICAGO AGENCIES

CHICAGO HEALTH DEPARTMENT AND MUNICIPAL TUBERCULOSIS SANITARIUM It is recommended that:

1. Emphasis in the nursing program shall be placed on systematized health teaching in the homes and clinics, with suitable demonstrations wherever possible by the Municipal Tuberculosis Sanitarium and more emphasis by the Chicago Health Department.

2. Consultation service in nutrition, health education, and mental hygiene shall be made available to the nursing staff.

3. When the recommended salary increases are put into effect, requirements for promotion shall be raised accordingly to meet at least the minimum requirements recommended by the National Organization for Public Health Nursing.⁹

4. Promotions for nurses shall be contingent upon postgraduate work in public health nursing as well as upon efficiency.

5. Professional reference material, books, magazines, and films shall be made available to the tuberculosis nursing service of the Municipal Tuberculosis Sanitarium and additional reference material to nurses in the substations of the Chicago Health Department; there shall also be additional films for use in the staff-education programs.

CHICAGO HEALTH DEPARTMENT, MUNICIPAL TUBERCULOSIS SANITARIUM, INFANT WELFARE SOCIETY OF CHICAGO, AND VISITING NURSE ASSOCIATION OF CHICAGO It is recommended that these agencies assist in the establishment of a public health nursing teaching center (see pages 816-817). This recommendation applies to the Municipal Tuberculosis Sanitarium only if the tuberculosis nursing service remains on a specialized basis.

CHICAGO HEALTH DEPARTMENT It is recommended that:

1. The Nursing Service Section shall be reorganized as outlined in Chapter 34 and in accordance with the over-all administrative plan recommended in Chapter 42.

2. Salaries shall be provided in the health department budget for sufficient nurses to operate adequately a generalized public health nursing program, including care of crippled children, tuberculosis nursing, and school nursing.

3. Consultant nursing services shall be provided in the fields of tuberculosis, maternal and child health, school health, and venereal diseases.

4. More emphasis in the nursing program shall be placed on systematized health teaching in the homes and in the clinics, with suitable demonstrations wherever possible.

5. The program of instruction and observation for student nurses shall be limited definitely in number until such time as a teaching center shall be established.

6. The Civil Service Commission shall be requested to revise the

⁹ See Appendix IV.

classification for public health nurses generally as outlined in the discussion of the reorganization of public health nursing in the health department and specifically as follows:

a. Set up additional classifications for the public health nursing group to include key nurses, assistant supervisors, and consultants, with adequate compensation in recognition of the additional responsibilities over and above those of the classification in which each was originally employed, and provide in-grade promotions with salary increases which give recognition to years of service.

b. Establish the following two classifications of staff nurses: (i) *junior public health nurse*, requiring only state registration and limited public health preparation; (ii) *public health nurse*, requiring state registration and certification and at least one year of public health preparation in a recognized university or college.

7. The newly organized Chicago Council on Community Nursing shall be asked to serve as an advisory council to the public health nursing service of the Chicago Health Department to assist with promoting and supporting an adequate program, maintaining high standards, and interpreting the program to the public and the needs of the community to the agency.

MUNICIPAL TUBERCULOSIS SANITARIUM It is recommended that:

1. The tuberculosis nursing service shall be rendered part of a generalized nursing service under the direction of the reorganized nursing division of the health department.

2. A nursing director shall be appointed immediately who has the qualifications to enable her to direct or to act as consultant in this specialized service and shall be paid a salary commensurate with the responsibilities involved.

3. Pending the selection of a well-qualified person for the position of director, assistance shall be obtained from the Division of Public Health Nursing of the Illinois Department of Public Health so that plans for urgently needed staff education may not be delayed.

4. The plans recommended in the tuberculosis section with regard to the field nursing program shall be incorporated into the reorganization of the nursing program.

CHICAGO MATERNITY CENTER It is recommended that:

1. A qualified nurse director shall be employed to administer and to supervise the nursing service.

2. Closer co-ordination of policies, procedures, and nursing

instructions shall be worked out between the Chicago Maternity Center and the Chicago Health Department to facilitate the recommendation that prenatal and postnatal instruction of the Chicago Maternity Center patients be given by health department nurses (see recommendation 2, page 820).

3. Plans for the initiation of a teaching program for graduate nurses shall be delayed until enough well-qualified personnel are available and a stable nursing service program has been in force for at least one year.

4. A simple daily record of nurses' activities be initiated and that from these a monthly and a yearly report of activities be compiled.

5. The teaching of mothers' classes be resumed as early as possible.

6. A job analysis of the various nursing positions be made and responsibilities of nursing personnel outlined and made available to all members of the nursing staff.

INFANT WELFARE SOCIETY OF CHICAGO It is recommended that:

1. As soon as well-qualified nurses are available, the staff education program shall focus on new nursing procedures and new problems rather than on covering deficiencies in the undergraduate or graduate programs or providing substitutes for postgraduate work in public health nursing.

2. The Infant Welfare Society shall work out a nursing program with the Chicago Health Department so that nurses from both organizations will render generalized nursing service in specified districts, thereby eliminating duplication of services.

VISITING NURSE ASSOCIATION OF CHICAGO 1. Some thought shall be given to the possibility of using practical nurses in the routine care of chronic patients.

2. By all possible methods the case loads of the nurses shall be reduced as soon as possible.

3. As the case loads are lightened and the staff is increased, the former comprehensive program of teaching and demonstration shall be resumed at the earliest possible moment.

4. An educational director for the agency shall be appointed.

5. When the number of personnel has been increased sufficiently to take on new responsibilities, the association shall consider developing a part-time industrial nursing service in small plants.

AMERICAN RED CROSS (CHICAGO CHAPTER) 1. The program for the teaching of home hygiene and care of the sick shall be expanded,

especially to include a larger number of young mothers in the community.

2. In the expansion of the teaching program the American Red Cross shall rely upon public health nurses for the recruitment of nurse teachers and for the stimulation and organization of classes in their community rather than for any actual assistance with the teaching program.

3. The American Red Cross shall make the services of the full-time nursing staff available in a consultant capacity and, upon request, to public health agencies in the interest of assisting nurses to do more effective group teaching in clinics and schools.

4. All schools desiring home nursing classes shall be encouraged to supply adequate space and equipment for the teaching of the courses so that the nurse-teacher will not be handicapped by make-shift provisions.

COOK COUNTY AGENCIES¹⁰

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH It is recommended that:

1. The Division of Public Health Nursing shall be reorganized as outlined at the beginning of this chapter and in accordance with the general administrative setup recommended on pages 962-963.

2. Sufficient personnel shall be provided, including nurses and clerical workers, to enable the Division of Public Health Nursing to execute an efficient generalized public health nursing service, and that this program shall include tuberculosis nursing service in all areas except Evanston and Oak Park.

3. Consultant service shall be provided in the fields of maternal, child, and adult health, school health, and mental hygiene in addition to those now provided in tuberculosis and venereal disease; that some of the foregoing be combined so that for the present the total number of consultants be limited to four.

4. Emphasis in the nursing program shall be placed upon systematized health teaching in the homes and in the clinics, with suitable demonstrations wherever possible.

5. This consultant service shall be made available upon request to the various boards of education and agencies in the county outside Chicago, which now employ public health nurses. This recommendation is made for the Oak Park Health Department also.

¹⁰ These special recommendations are in addition to the general recommendations presented for the Chicago-Cook County area.

6. More adequate office space, equipment, and professional teaching materials shall be provided for the Division of Public Health Nursing by the department.

7. More emphasis shall be placed upon the care of the premature infant and upon the nursing service to newborn babies during the first month of life.

8. In the school nursing program emphasis shall be placed upon the elementary school program first and the high school nursing program second.

9. One of the districts shall be designated as a teaching center, and all students and nurses new to the staff shall receive their training in this center under the supervision of an educational director or someone specifically assigned this responsibility.

10. When the recommended increase in salaries has been made, requirements for appointment shall be raised accordingly, at least to meet the minimum requirements recommended by the National Organization for Public Health Nursing.

11. A bedside nursing care service shall be included in the generalized nursing program for the county whenever the preventive and educational aspects of the program are well established and a large enough staff is available.

12. When the members of the nursing staff are available and trained for industrial nursing service, this type of service shall be offered to the many small industries in the county.

13. An advisory committee on nursing composed of professional and lay members representative of various community groups shall be organized to act in an advisory capacity to the public health nursing service.

TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY

1. The tuberculosis nursing service in the county outside Chicago, with the exception of Evanston and Oak Park, shall be the responsibility of the Cook County Department of Public Health rendered as part of their generalized nursing program.

2. The salaries of the nurses shall be subsidized by the Tuberculosis Institute of Chicago and Cook County until provision can be made to pay them through public funds.

3. During the period when the Tuberculosis Institute carries the salaries of the nurses assigned to the Cook County Department of Public Health, a special advisory board composed equally of members from the boards of the Tuberculosis Institute and the Board of

Health of Cook County shall act in an advisory capacity to the Division of Public Health Nursing of the Cook County Department of Public Health.

4. The Tuberculosis Institute nurse now working in Evanston shall be assigned to the general nursing staff of the Evanston Department of Health, and the nurse working in Oak Park, to the recommended Community Nursing Service of Oak Park and River Forest when it is organized.

5. Salaries of these nurses shall be subsidized by the Tuberculosis Institute until money from tax funds is available to pay the Evanston nurse and the recommended Community Nursing Service can take over the salary of the Oak Park nurse.

6. Special retirement provisions shall be worked out with the Civil Service Commission to cover the transfer of the employees so that service with the Tuberculosis Institute of Chicago and Cook County would not be lost entirely.

EVANSTON AND OAK PARK HEALTH DEPARTMENTS AND EVANSTON BOARDS OF EDUCATION (DISTRICTS 75 AND 76) It is recommended that:

1. The nursing program of the health department shall be worked out co-operatively with the newly organized Community Nursing Service.

2. The planning for both official and nonofficial agencies shall be made with the expectation of eventual amalgamation of all nursing services in Evanston, and, in Oak Park, in the Oak Park-River Forest area.

3. The nursing service for elementary schools in Evanston districts 75 and 76 shall be transferred to the supervision of the health department and appropriate funds allotted for this purpose. The same recommendation is made for Oak Park School District 97.

4. A co-ordinating committee shall be organized to assist in developing the school health program in public schools, this committee to be composed of the superintendent of schools, the health commissioner, a member of the board of education, a member of the board of health, the director of physical education from the board of education, and the supervisor of the health department nursing service. It is recommended also that in Evanston, a teacher from one of the schools and a staff nurse shall serve on this committee. It is recommended that in Oak Park, a representative from the parochial schools shall serve.

5. A more comprehensive report of daily nursing activities shall be inaugurated, preferably by adopting the system recommended by the Illinois Department of Public Health.

6. The recommended local community nursing council shall act as an advisory committee to the health department's public health nursing service.

7. Nursing visits in behalf of acute communicable disease shall be analyzed to determine where reduction in number of visits can be made safely.

SPECIAL RECOMMENDATIONS FOR EVANSTON HEALTH DEPARTMENT It is recommended that:

1. The school nursing service in public schools shall be incorporated into the generalized nursing program as soon as the staff is prepared to take on these additional responsibilities.

2. The director of nursing in the health department shall acquire additional experience in a large, well-organized city health department which conducts a generalized nursing program.

SPECIAL RECOMMENDATIONS FOR OAK PARK HEALTH DEPARTMENT It is recommended that:

1. The nursing staff be increased to a number sufficient to provide a relatively complete service in health promotion and disease prevention in the community. It is estimated that at least 9 to 11 nurses and 1 to 2 nursing supervisors would be needed to carry on nursing services for acute communicable diseases, elementary school children—public and parochial—venereal diseases, and health education. An assistant supervisor to act as a school nursing consultant will be needed also.

2. Nursing services shall be generalized within the department and each nurse shall carry all services within a given district.

3. The field nursing service shall include home visiting for the purposes of follow-up and contact-tracing in the venereal-disease-control program.

4. The sanitary inspection of business establishments shall be eliminated from the duties of the public health nursing staff.

5. A co-ordinated program for the inspection of maternity departments of hospitals shall be worked out with the county and the state so that duplication of nursing services shall be eliminated.

6. Suitable offices for the nursing staff shall be provided.

7. The title of the supervisory nurse shall be changed from "Di-

rector of Health Education" to "Supervisor of Nursing Service," to describe more adequately her broadened responsibilities.

SPECIAL RECOMMENDATIONS FOR RIVER FOREST It is recommended that the Cook County Department of Public Health shall assist the village of River Forest to implement the generalized program of nursing to be planned by the proposed advisory committee on nursing under the auspices of the Oak Park and River Forest Planning Committee.

VOLUNTARY AGENCIES OF EVANSTON AND OF OAK PARK-RIVER FOREST It is recommended that:

1. The voluntary nursing agencies shall be amalgamated into a single agency. In Evanston this agency would be known as the "Evanston Community Nursing Service." In Oak Park-River Forest the agency would be called the "Community Nursing Service of Oak Park and River Forest."

2. The nursing service, including bedside care, shall be rendered on a generalized basis and each nurse shall carry all services in a given district.

3. The following preliminary steps shall be taken in establishing this new agency: (a) a plan for amalgamation shall be approved by the board of directors of each agency; (b) a special organizing committee shall be appointed to work out the broader details of budget, personnel policies, suitable office space, selection of the nursing director, and other preliminary details.

4. As soon as the broad general principles and necessary framework of the new organization have been set up by the organizing committee, the task of working out the specific details and plans of operation of the nursing program in respect to personnel policies, working conditions, staff education program, nursing service program, records, and reports shall be delegated to the nursing director.

5. The services now rendered in these two communities by the Metropolitan and the John Hancock life insurance companies shall be contracted for definitely through the proposed community nursing services as soon as preliminary organization has taken place and the nursing programs have been planned.

6. The plans for the nursing program for the agency shall be coordinated with that of the expanded program recommended for the health department so that all possibility of gaps or duplication of nursing services be eliminated.

SPECIAL RECOMMENDATIONS FOR EVANSTON (VOLUNTARY AGENCIES) It is recommended that:

1. As more adequate public health nursing programs are developed in Cook County and in communities outside Evanston, the services now being given by the Visiting Nurse Association of Evanston shall be withdrawn and turned over to the agencies operating in the local area. At the present time the services for crippled children now rendered by the Visiting Nurse Association in areas outside Evanston could well be turned over to the Cook County Department of Public Health—arrangements to be worked out with the North Shore Association for the Crippled in co-operation with the Division of Services of Crippled Children, University of Illinois.

2. The new program shall include provision for more emphasis on mental hygiene, geriatrics and nutrition services, and these shall be included in the staff education program in the next few years.

3. At least one nurse shall be selected immediately to acquire preparation in mental hygiene and geriatrics so that she may assist in the staff education program and under the guidance of the official agency act as a consultant to both official and nonofficial agencies in Evanston.

4. The use of practical nurses for some of the routine duties of the public health nurse, particularly those having to do with chronic and long-term illnesses, shall be given serious consideration.

5. The adoption of the code system of recording nursing activities in accordance with that recommended by the Illinois Department of Public Health shall be considered.

SPECIAL RECOMMENDATION FOR OAK PARK (TUBERCULOSIS NURSING) It is recommended that the tuberculosis nursing service shall be transferred to the health department as soon as the department has a qualified full-time health officer under whose medical direction a well-rounded nursing program has been established.

BERWYN, CICERO, ELMWOOD PARK, LA GRANGE, MAYWOOD, SKOKIE, WESTERN SPRINGS, WILMETTE, AND WINNETKA It is recommended that:

1. Increased emphasis shall be placed upon the maternal and infant and preschool program in Berwyn, Cicero, and La Grange.

2. The nursing staff shall be increased to provide (or to improve) a generalized nursing program in all communities except Winnetka.

3. A field nursing manual of standing orders and nursing procedures shall be compiled and made available to the nursing staffs in

Berwyn, Cicero, Elmwood Park, Maywood, Western Springs, and Winnetka.

4. A limited number of reference books on public health nursing (or additional books) shall be furnished the nursing staffs in Berwyn, Cicero, Elmwood Park, La Grange, Maywood, Skokie, and Western Springs.

5. An advisory committee composed of representatives of various community groups shall be organized to act in an advisory capacity to the public health nursing services in each of the communities listed in Recommendation 4, above.

6. A more comprehensive report of daily nursing activities shall be inaugurated, consideration being given to the adoption by Berwyn, Cicero, Elmwood Park, Maywood, and Winnetka of the system recommended by the Illinois Department of Public Health.

SPECIAL RECOMMENDATIONS FOR INDIVIDUAL COMMUNITIES¹¹
Berwyn.—It is recommended that less emphasis shall be placed upon home visiting in behalf of school children.

Cicero.—It is recommended that:

1. The nursing staff all shall be placed upon a twelve-month year and that equal vacation time with pay shall be allowed each nurse.

2. The public health nursing supervisor shall give more time and attention to her supervisory responsibilities, including assistance to nurses in making the change from specialized service.

Maywood.—It is recommended that:

1. The emphasis in the public health nursing program shall be on nursing activities rather than sanitation.

2. Nursing assistance shall be supplied in the infant, preschool, and immunization clinics now under the supervision of the public welfare organization.

Stickney.—It is recommended that in the absence of a health officer or any technical supervisory personnel, the Cook County Department of Public Health shall be asked to furnish nursing supervision to the nursing staff of this unit.

Western Springs.—It is recommended that adequate health room facilities, providing privacy, sufficient space, and ample equipment, shall be provided in the school for the nurse's use.

Wilmette.—It is recommended that:

1. The nursing services of the Wilmette Health Department, the

¹¹ These special recommendations are in addition to the general recommendations for the entire area and also to those presented for the nine communities.

Wilmette Health Center, and School District 39 shall be amalgamated.

2. The nursing division of the Cook County Department of Public Health shall be asked to furnish consultation service to the three agencies and assist them in working out plans for this amalgamation and the establishment of a generalized nursing service in Wilmette.

3. If bedside nursing care is to be included in the nursing program, sufficient nursing staff shall be included to care for this service adequately so that the preventive side of the program will not be neglected. A ratio of one nurse per 2,000 population is needed if full bedside care is to be given. If no bedside care is given, the ratio would be one nurse to approximately 5,000 population.

Winnetka.—It is recommended that:

1. One of the nursing staff shall be designated to take some responsibility in the technical supervision of the nursing program.

2. When the nursing supervisory service and a generalized type of nursing service are established, the nursing staff of the health department shall furnish the nursing service in both public and parochial elementary schools.

DENTAL NEEDS AND FACILITIES

by *William P. Kroschel, D.D.S.*and *James F. Hawkins, D.D.S.*

AT THE REQUEST of the dentists in the Chicago-Cook County area, a survey of dental needs and facilities was made as a part of the general health survey of the area. Information was obtained, through questionnaires and personal visits, about the facilities and personnel available to meet the need for dental services and the extent to which they were being utilized. A special survey also was made of the dental health of school children, based on methods established in previous studies designed to measure the dental health status of a population group.¹ A tabulation of the number of dentists in Chicago and Cook County, their distribution according to three economic areas,² and the ratio of dentists to population in each area was prepared also.

The number of dentists in relation to population, by economic areas, is especially important from the standpoint of the availability and accessibility of dental care to the population. It is assumed that if enough dentists are available, and if a comparatively small amount of travel time is required to reach a dental office, a substantial percentage of the population will be likely to obtain dental care. The dentist-population ratios in the high, medium, and low economic areas, the commercial area, Chicago as a whole, and Cook County exclusive of Chicago are presented in Table 113. Examination of the data presented in this table indicates that the high and medium economic levels have more dentists per unit of population than does

¹ A detailed description of the method of study, together with reference to previous studies in which this method was developed, is presented in Appendix V. The complete report of the study of dental needs among school children of Chicago and Cook County is available for inspection from the District Office of the United States Public Health Service, 610 South Canal Street, Chicago 7, Ill. Because of space limitations, it is possible to present only a brief summary of findings in this chapter.

² For the purposes of this survey, the U. S. Bureau of the Census distribution of rental areas for dwelling units, 1940, was followed, and the five census classifications were combined in three socio-economic groups: high (A and B), medium (C), and low (D and E).

TABLE 113. DENTIST-POPULATION RATIO FOR CHICAGO AND COOK COUNTY

| <i>Economic Area</i> | <i>Dentists^a</i> | <i>Population^b</i> | <i>Ratio Dentists to Population</i> |
|------------------------------------|-----------------------------|-------------------------------|-------------------------------------|
| Chicago | 3,261 | 3,396,808 | 1 : 1,042 |
| High | 904 | 863,691 | 1 : 955 |
| Medium | 816 | 1,081,308 | 1 : 1,325 |
| Low | 835 | 1,445,588 | 1 : 1,731 |
| Commercial | 706 | 6,221 | 1 : 9 |
| Cook County (exclusive of Chicago) | 525 | 665,534 | 1 : 1,268 |

^a Source of data for dentists: *Classified Telephone Directory*, June, 1945, and the January-May, 1946, issues of the *Journal of the American Dental Association*.

^b 1940 census figures.

the low economic area. Chicago as a whole has a dentist-population ratio of one dentist to 1,042 people, which, in itself, is a relatively favorable ratio. This ratio might be considered adequate if the dentists were distributed evenly so that their services would be readily available and accessible to the people. However, in the two areas of highest economic status, each dentist has about one-half as many people to serve as does each dentist in the area having low economic status. Cook County (not including Chicago) has a dentist-population ratio of one dentist to 1,268 people, about the same ratio as is found in the middle economic area for Chicago (1:1,325).

DENTAL NEEDS AMONG SCHOOL CHILDREN OF CHICAGO AND COOK COUNTY

Chicago has a school population of 690,408 (1940 census) white children aged 5-17, and 57,156 Negroes in the same age group. A sample was obtained from each of the three economic areas (high, medium, and low) to give an index of the dental health in each area. Samples of children were taken from both public and parochial schools and from the gymnasium and health classes of the high schools.

Of the 690,408 white children attending school, 13,444 received tongue blade examinations, while for the Negro children a sample of 3,780 was obtained of the 57,156 attending school. The sample, therefore, includes about 1.5 percent of the white and about 5 percent of the Negro children enrolled in the schools of Chicago.

For the survey of school children in Cook County outside Chicago, four towns were selected: Oak Park, a western suburb of Chicago, with a population of 66,015 white persons (1940), which is considered representative of the upper socio-economic groups in the county; Lemont and Matteson, both small villages representative of

the middle socio-economic groups; and Melrose Park, located 15 miles west of Chicago, with a population fairly representative of the lower socio-economic groups.

Approximately 10 percent of the entire school population of Oak Park, 1,249 children, received dental inspections. The 102 children given dental inspections in Matteson included those enrolled in its elementary school. In Lemont the 103 children examined were those in the grade and high schools having a history of uninterrupted residence in the village. The public water supply in Lemont has a natural fluorine content of 1.4 p.p.m.

In Melrose Park examinations were made of all the white children in a parochial grade school who were present on the day of the survey (359). From a dental standpoint the interest in this particular school is centered in its dental program as a parochial school. In addition to a dental education program, an examination of all the enrolled children is made annually by a local volunteer dentist. The most interesting feature of this program is the provision that no child may be graduated from the elementary school without a "100 percent dental correction certificate." The program has been in effect for the last seventeen years.

It has been demonstrated that the various racial groups show markedly different tendencies with regard to susceptibility to dental caries.³ Because of this fact, separate studies were made of the Negro children and the white children by economic areas. It was found that the Negro children fall chiefly into the low economic classification. Only nineteen Negro children attended schools in areas having medium economic status. Therefore, Negro children were classified entirely in the low economic areas.

The dental survey of 13,444 white and 3,780 Negro school children in Chicago showed that there is no substantial difference in age-specific rates of prevalence of dental caries among white children in the three economic groups in Chicago (high, medium, and low). In the three economic areas combined, dental caries has attacked one or more permanent teeth in approximately 8 percent of 6-year-old white children. At age 7, the range among economic groups in the percentage of children with dental decay is at its greatest, with 24.0 percent of children in the areas of high economic status showing

³ Henry Klein and C. E. Palmer, "On the Epidemiology of Dental Caries," in *University of Pennsylvania Bicentennial Conference*, Philadelphia, University of Pennsylvania Press, 1940, pp. 1-25.

TABLE 114. PERCENTAGE OF CHILDREN WITH ONE OR MORE D.M.F. (DECAYED, MISSING, OR FILLED) PERMANENT TEETH IN CHICAGO AND SELECTED SUBURBAN AREAS IN COOK COUNTY BY RACE, ECONOMIC AREA, AND SELECTED AGE GROUPS

| <i>Economic Area and Race</i> | AGE LAST BIRTHDAY | | | | |
|---|-------------------|------|------|------|------|
| | 5 | 7 | 10 | 14 | 18 |
| Chicago White Children | | | | | |
| Economic area: High | 3.1 | 24.0 | 74.1 | 96.0 | 98.7 |
| Economic area: Medium | ... | 26.9 | 77.9 | 97.0 | 98.9 |
| Economic area: Low | ... | 49.2 | 77.1 | 92.6 | 98.5 |
| Total | 1.6 | 31.7 | 76.1 | 94.5 | 98.7 |
| Chicago Negro Children | | | | | |
| Total ^a | 2.3 | 21.9 | 56.7 | 73.9 | 80.5 |
| Surrounding areas in Cook County (White Children) | | | | | |
| Oak Park | 4.5 | 15.6 | 76.2 | 92.6 | 93.9 |
| Melrose Park | ... | 14.3 | 52.2 | 85.0 | ... |
| Lemont | ... | ... | 80.0 | 88.9 | 66.7 |
| Matteson | ... | 11.1 | 75.0 | 83.3 | ... |

^a Includes 3,761 children in low economic area and 19 children in medium economic area.

evidence of dental decay in the permanent teeth as compared with 49.2 percent in the area having low economic status. The proportion of children younger than ten having D.M.F. (decayed, missing, filled teeth ⁴ is markedly higher in the latter area. Among children aged 10 and above the prevalence of dental caries is fairly uniform for children in all three areas (at age 10, high, 74.1 percent, medium, 77.9 percent, and low, 77.1 percent). By the time the Chicago white children have reached 18 years, more than 98 percent, from all economic areas, have experienced dental caries. On the other hand, at age 18 about 81 percent of the Negro children have experienced dental caries.

Except for six-year-olds, the percentage of Negro children with D.M.F. permanent teeth is lower than for white children in all three economic areas. At age 6 the percentage for the Negro children is 8.7, corresponding closely with the experience of white children of the same age. At age 10 the caries prevalence for Negro children is 56.7 percent, whereas the average for white children is 76.1, and 73.9 percent at age 14, as compared with the white average of 94.5.

Oak Park, one of the four communities surveyed in Cook County, shows about the same rate of dental caries prevalence as that found

⁴The dental caries experience, in terms of the number of decayed, missing, or filled teeth per unit of population, serves as a rate of dental caries prevalence (designated briefly as D.M.F.).

for the white children in Chicago. The other communities, Melrose Park, Lemont, and Matteson, have a lower dental caries prevalence than that found for Chicago white children and for Oak Park children.

The Chicago white children have an annual increment of 0.7 D.M.F. teeth per child per year. Oak Park has an annual dental-caries-attack rate only slightly lower than Chicago. The annual dental-caries-attack rate among the Negro children is less than one half as high (0.3 of a tooth) as that of the Chicago white children.

Approximately 30 percent of the Chicago white children with one or more D.M.F. teeth show no evidence of fillings in the permanent teeth, while the Negro children, approximately 70 percent of whom had D.M.F. teeth, show a little dental care in the form of fillings. Only about 5 percent of the children in Oak Park with D.M.F. teeth show no evidence of dental care.

Oak Park, having about the same caries attack rate in deciduous teeth as that found for all Chicago white children combined, shows about twice as high a percentage of children with one or more filled deciduous teeth as does Chicago. Whereas 41.4 percent of Oak Park children show evidence of dental care in the deciduous dentition, the percentage was only 23.7 for Chicago white children. The Negro children of Chicago have a lower dental caries attack rate in the deciduous teeth than do the white children. They also show considerably less evidence of dental care in the form of fillings (6.5 percent).

The generally accepted objective of a dental care program for children is the prevention of tooth loss. The most effective method of preventing tooth loss is the proper and timely insertion of fillings in early carious lesions of the teeth. By determining the dental caries prevalence rate of a given community, together with the tooth mortality rates by age-specific groups, the effectiveness of a dental care program may be evaluated.

If the dental needs of the child population are cared for when they arise and are not allowed to remain neglected, the tooth-loss rates will be kept down to a minimum. Among the older children, those in the area of higher economic status show much greater evidence of dental care than do those in the low economic group, but the latter have received more dental care than children in the medium economic group. The evidence that more dental care is given to children in the group least able to afford such care, rather than in the

medium economic group, probably reflects the fact that treatment is given to the low economic group through dental clinics in the public schools.

Examination of the data on tooth mortality for the white children examined in Chicago shows that children in the medium and low economic areas have a consistently and appreciably higher number of missing permanent teeth than do children in the high economic area. The tooth mortality rates by age for Negro children are generally higher than rates for white children in the high economic area, but much lower than the average tooth mortality for white children in the two lower economic areas. Negro children, however, because of their lower caries-prevalence rates, need less dental care to save teeth than do white children.

In Oak Park, having about the same dental-caries-prevalence rate as that shown for the Chicago white children, but greater proportions of children receiving dental care, the children examined have lost about half as many teeth as have been lost by the Chicago white children of all areas. This finding tends to demonstrate that early detection of dental caries and subsequent filling of carious permanent teeth will reduce the tooth mortality rates to a minimum.

A greater proportion of children showed evidence of dental care in the permanent and deciduous teeth where the dentist-population ratio was more favorable. This finding was particularly evident for the Oak Park school children.

The survey findings indicate that Chicago white children, with a lower D.M.F. rate than that found for other communities surveyed in various sections of the United States, have a significantly higher permanent-tooth mortality rate. This finding may be attributed to the fact that more dental care is received by children in the other communities.⁵

DENTAL FACILITIES AND PERSONNEL IN CHICAGO

The data presented in the previous section give some indication of the magnitude of the dental-care problem in the Chicago-Cook County area for school children alone. This section and the following one on Cook County present the data gathered in relation to the number and location of dental facilities, the type and extent of the services provided, and the number of dentists giving part or full

⁵ See references 2, 5, 6, and 8 in Appendix V. Also, J. N. Wisan, "Studies in Dental Public Health Administration" (unpublished).

time to the practice of clinical dentistry. This information may serve as a guide to effective planning for a co-ordinated dental health program in the Chicago-Cook County area.

Facilities for dental care in Chicago include, in addition to those provided by dentists in their regular private practice, clinics conducted by various community agencies and industrial plants. The services offered by these organizations differ in extent and with respect to the functions for which the programs were established. In the majority of cases the primary purpose of the program is to provide care for individuals unable financially to assume full responsibility for the required dental service.

According to information obtained at the time of the survey, 94 dental clinics are operated in Chicago. Their distribution according to the type of administrative control is as follows: Chicago Health Department, 52; hospitals, 19; official and voluntary agencies, 14; dental schools, 3; industrial plants, 6.

DENTAL SERVICE BY THE CHICAGO HEALTH DEPARTMENT The Chicago Health Department has the largest remedial dental service program of any of the agencies surveyed. Its facilities include 64 dental clinics, which provide services for preschool, school age, and adult groups. At the time of the survey only 52 were in operation, 12 school clinics having been closed during the war years because of the shortage of dentists.

Type of dental program.—The dental services of the clinics administered by the Chicago Health Department are restricted to extractions, fillings, and prophylaxis. There is no over-all diagnostic and remedial service program for any age group in the community, and the dental care provided is available only under certain conditions. In most of the clinics, eligibility for care is limited to school-age children whose parents are financially unable to pay for the services of a private dentist. Clinics are maintained in public elementary schools, neighborhood clubs, a settlement house, a low-cost-housing project, and in connection with a venereal-disease-treatment center.

The Chicago Health Department conducts 47 active dental clinics in co-operation with the Board of Education of Chicago, which provides the space in its school buildings and a large portion of the equipment. Services are restricted to grade school children living within the district. Clinic hours correspond to the regular school hours—9:00 A.M. to 3:30 P.M. The number of weekly sessions in the

different clinics is determined by the actual demand for dental care within their respective areas.

Two additional dental clinics for school children are maintained in two neighborhood boys' clubs—the American Boys' Commonwealth and the Deborah Boys' Club. Dental services are available to pupils attending the public and the parochial schools in the vicinity, as well as to members of these clubs. All the clinic equipment is furnished by the sponsors of the clubs.

A program designed especially for preschool children is carried on in two clinics. One of these—the Mary Crane Preschool Clinic—is established at Hull House. The other is maintained in the Ida B. Wells housing project. Both these clinics extend their services to all preschool children living in the area. At the present time the Mary Crane Preschool Clinic also admits school-age children and maternity cases from the immediate neighborhood.

School children are certified as eligible for the service by the principals of the schools which they attend. All preschool children in the districts served by the two clinics organized for this age group are admitted, without regard to family income. Both these preschool dental clinics are located in densely populated sections of the city, where income levels are low.

In addition to the clinics for children, the health department administers a remedial dental service program in connection with one of its venereal-disease clinics. Patients attending any of the special treatment centers may be referred to this dental clinic for care. It operates one day each week throughout the calendar year.

On the average, each dentist sees twelve patients during a clinic period. Approximately four clinic visits are needed to complete the needed dental services for the average person, including the preschool children. On the basis of data submitted by the clinicians, it is estimated that under the present program about 16,800 persons per year receive free dental care through the facilities of the Chicago Health Department.

Dental staff.—The dental service staff of the Chicago Health Department consists of 30 full-time dentists, including a director, a supervisor, and 28 clinicians. The director determines the policies of the department and is responsible to the commissioner of the health department. The supervisor, by regular inspection of clinic practice, sees to it that the clinicians interpret policies correctly and carry them out properly.

With the exception of 4 recent appointees (since 1943), all the dentists on the staff have civil service status, and these 4 are planning to take the examination as soon as it is offered. The director and the supervisor are employed on a twelve-month basis; the clinicians on a ten-month basis—the school year. Most of the dentists maintain a private practice in addition to their official clinic schedules. Only 3 are not in private practice. The present salary range is from \$253 per month for recent appointees to \$445 for the director. Exclusive of the director, the average monthly salary paid to the dental staff is \$283.03.

More than half the dentists have been employed in their present positions for at least 17 years. The length of service varies from less than a year to 30 years, the average time being 12.6 years.

There is a definite relationship between the length of service and the salary received. Seventeen dentists with seniority are paid \$294.50 per month. Eight dentists, all under civil service, but with a shorter span of employment, receive \$282.50 per month. Three dentists on a temporary status received \$253.00 per month. The age range of the dental staff is from 30 years to 60 years; half the staff members are over 50. The director is one of the youngest staff members.

Most of the dentists employed by the department obtained their professional training at one of the dental schools in Chicago. Only three hold degrees from colleges outside the city. A number of them have taken special training beyond that required for a degree in dentistry. Two hold a master's degree—the director, an M.S.D., and one clinician, an M.S.M. Additional training was mentioned by 12 other clinicians, 6 of whom had had advanced courses in dentistry for children.

All except ten of the dental staff are members of the Chicago Dental Society. Five of the 10 have held appointments in the Chicago Health Department for more than 15 years.

Dental clinic equipment.—The dental equipment in 39 of the 52 clinics is of modern type, and on the whole it is well suited to dentistry for children. These clinics include 36 maintained in school buildings, 2 in neighborhood club houses, and 1 for preschool children in the Ida B. Wells housing project. None of this equipment is owned by the health department. In the remaining 13 active clinics the equipment, all of which is owned by the health department with the exception of that in the Mary Crane Preschool Clinic, is obsolete and in many instances badly worn. All but one of these (the venereal

disease clinic) are operated specifically for children. In none of these 13 clinics did the survey representatives consider the equipment adequate for children's dentistry.

DENTAL SERVICES BY HOSPITALS Dental clinics associated with hospitals are defined as those over which an established hospital exercises complete or major control. In Chicago 19 hospitals maintain facilities for some type of dental care. Dentistry is a separate division in 8 of these hospitals and functions in a general department of the institution in 9 others.

The basic requirements for a department of dentistry within a hospital, as outlined by the Committee on Hospital Dental Service of the American Dental Association, are as follows: (1) the dental department should be under the direction of a dentist designated by title, as are other service chiefs; (2) special effort should be directed toward adequate training of interns and residents; (3) hospital patients should be given a complete dental examination by a member of the dental staff as soon after entrance as their conditions permit; (4) complete roentgenographic examination should be routine for hospital patients as soon as possible; (5) student nurses should be assigned to care for patients on the dental service of the hospital and to assist in the dental clinic; (6) oral conditions should be recorded on a special form with appropriate recommendations for treatment, and this form should become part of the official hospital record of the patient.

Dental departments now are recognized by many hospitals as integral units of a modern hospital's organization. In Chicago, however, none of the hospitals in which dental services are available meet all the minimum requirements set up by the Committee on Hospital Dental Service. As a matter of fact, there is no general agreement among the institutions included in this survey regarding the purposes of a dental clinic within a hospital. In the judgment of many of the hospital authorities the proper function of a dental department in a hospital is the provision of dental care for inpatients to supplement the medical services. Their general dental programs, consequently, are restricted largely to extractions, other oral surgery, specialized treatment, and emergency care. Staff members of other institutions, however, are of the opinion that hospital dental clinics serve the same function as any dental clinic, which they consider should be limited to services for patients financially unable to pay for care by a private dentist. These divergent points of view among

hospital staffs are clearly reflected in the organization and practices reported by the different dental clinics.

The first dental clinic in a Chicago hospital was established in 1864. Since that time the number of dental clinics within hospitals has increased greatly, but the rate of increase has been sporadic. At present there are 5 dental clinics in tax-supported institutions and 14 in voluntary hospitals, each operating either as part of the regular organization of the institution or in the outpatient department associated with it. Most of these hospitals are classified as general. Dental facilities are maintained by 14 general hospitals, 2 children's hospitals, and 3 other specialized institutions.

Type of dental program.—In approximately half the hospital dental clinics, care is limited to low-income groups or to individuals requiring certain specialized services. One hospital under Federal control restricts its dental program to beneficiaries of the United States Public Health Service. Seven dental clinics report services for all income groups, two of which are maintained by tax-supported specialized institutions. The majority of the hospital outpatient departments extend their dental service to both inpatients and outpatients and to all age groups.

The amount of time given to the dental program and the types of services provided vary greatly. A total of ninety-six half-days is available regularly each week in the dental clinics of Chicago hospitals. In one hospital, where care is restricted to inpatients, service is rendered as and when the need arises. Of those reporting a regular schedule, the number of clinic periods per week ranges from 1 to 11 half-day periods or, in hours, from 3 to 33 weekly. In all except two of these clinics, dental services are extended to outpatients. The distribution in the fifteen clinics maintaining dental facilities for outpatients is as follows:

| <i>Half-day Periods Weekly</i> | <i>Number of Clinics</i> |
|--------------------------------|--------------------------|
| 10 or 11 | 5 |
| 8 or 9 | 1 |
| 6 or 7 | 1 |
| 4 or 5 | 2 |
| 2 or 3 | 3 |
| Only 1 | 3 |

The major types of dental services offered in the nineteen hospital clinics include prophylaxis, extractions, and other oral surgery, X-

rays, fillings, artificial dentures, orthodontics, and nonspecified types of treatment. Two hospitals provide all these services except orthodontics, a highly specialized type of dental care. Most of them are available in seven other hospital clinics. Little remedial care is offered by any of the remaining clinics. In general, the extent of their services is limited to surgery, X-rays, and emergencies.

The different types of dental services reported by the hospital clinics and the number of clinics which provide these services are as follows: extractions, 14; oral surgery, 12; prophylaxis, 12; X-rays, 11; fillings, 9; prosthetics, 7; maxilla facial surgery, 2; orthodontics, 2; other treatments, 4.

Special departments of dentistry for children are maintained by 4 of the hospitals, and some provision for children is reported by 12 other dental clinics. Outpatients are admitted to thirteen of these clinics. Although a large proportion of the hospitals admit children for dental care, less than half offer corrective services. Fillings, extractions, and prophylaxis are provided for preschool children by only five clinics and for school-age children by eight.

The services of most of the clinics are primarily for the low-income group who can pay little if anything toward the cost of the dental care received. All accept patients who are unable to pay private fees, except one, which requires a small fee at each visit. Twelve clinics report that part or full payment is made by some of the patients. In three of these, either the care is entirely free or the patients pay the full cost.

Sources of support.—Funds for the operation of the dental clinics come from the regular hospital budget, from endowments, from welfare contributions, and from city, county, state, and Federal taxes. Three clinics are entirely supported by endowment, and five by tax funds. Part of the operating expenses of 5 dental clinics is met by the sponsoring hospitals, and 1 has a separate dental clinic budget. One clinic receives financial assistance from an official welfare agency. The remaining clinics are supported mainly from special contributions and fees. No information was available in regard to the financing of one dental clinic.

Dental staff.—In most of the hospitals which maintain dental services there is a regular department of dentistry which has its own staff. At the time of the survey, 71 dentists were on the staffs of the 19 clinics. These clinics, with the exception of those which are tax-supported, are staffed mainly by volunteers. The entire staff consists of volunteers in at least a third of the clinics in voluntary hospitals,

the number per clinic varying from 1 to 12 dentists. More than half the hospitals, however, employ at least one staff dentist on either a salary or a fee basis. Four hospitals employ full-time dentists. Three of these provide dental residencies or internships.

At the time these data were gathered, 23 dentists served full time on hospital staff, of whom 7 were interns or residents. Three residents and 16 dentists were paid a salary, the remaining 4 interns were employed on a maintenance basis. In nine different clinics, 34 part-time dentists served without remuneration, and 14 in four clinics were paid for their services. A total of 35 clinic dentists was receiving either a regular salary or maintenance from the hospital, and 2 were on a fee basis.

Staff personnel other than dentists were reported by twelve clinics. These include 2 dental hygienists, 3 dental technicians, 12 nurses, 8 dental assistants, 8 clerks, and 3 secretaries. Nurses were the only additional personnel in four clinics.

There are no dentally trained nurses in Chicago hospitals, and no specialized training courses for nurses in the field of dentistry are contemplated. Apparently, the usual procedure is to call a nurse from one of the other hospital services whenever one is needed in the dental clinic.

Four hospitals (two voluntary and two tax-supported) reported that their dental staffs conducted dental research in addition to giving care to inpatients and outpatients.

Dental equipment.—The dental equipment of the different clinics varied with the type and extent of dental care offered. One hospital which provides a specialized service in maxillo-facial surgery uses the operating rooms of the hospital for all dental care and has no regular dental equipment. Information regarding the dental facilities of one clinic was not available. The other seventeen hospitals reported 51 dental chairs, 44 dental units, and 20 X-ray machines. X-ray machines are a part of the regular dental equipment in thirteen clinics; the others make use of the general hospital equipment when necessary.

A dental library for the use of the staff was reported by five non-governmental and three governmental hospitals.

DENTAL SERVICES BY OFFICIAL AND VOLUNTARY AGENCIES The following official and voluntary agencies operate fourteen unattached clinics in Chicago: The Chicago Department of Welfare; The Juvenile Detention Home; The Bridewell (city jail); The Cook County Jail; voluntary welfare agencies; voluntary health agencies; and

homes for the aged and chronically ill. Quarters for the clinic are usually in the offices or the building of the sponsoring agency. Four are in settlements, one is in a boys' club, and one has its own building.

The types of service available and the number of clinics which provide each type are: prophylaxis, 10; extractions, 10; fillings, 9; X-rays, 8; dentures, 6; oral surgery, 3; and other treatments, 3.

The Chicago Department of Welfare Clinic.—This dental clinic serves a purpose entirely different from that of the other dental clinics. It provides the initial and the concluding steps in the dental care program organized for persons receiving financial assistance from this agency. It operates as a dental examining unit with the following functions: (1) to determine the amount and type of dental service the relief client requires, (2) to assign him to a qualified dentist for the work needed, and (3) to inspect the complete dental service received. A client may designate the dentist of his choice. If necessary, he is given a list of four or five dentists in his locality from which he may make a choice. These names are selected from the rotating roster of dentists with whom the agency has a working agreement.

The staff of the examining unit includes three part-time dentists, a full-time dental aide who serves as a receptionist, and a part-time stenographer, all of whom work under the supervision of the director of the Medical Division of the Chicago Department of Welfare. A total of approximately twenty hours weekly is given by the dentists to this program. They are paid on an hourly basis.

An advisory committee from the Chicago Dental Society works closely with the agency in all matters pertaining to the effective functioning of its dental program. The specific responsibilities of this committee are as follows: (1) to suggest or to recommend to the commissioner of the Chicago Department of Welfare policies or procedures designed to improve the quality of dental service; (2) to advise on problems related to professional dental practice; (3) to consider applications of dentists for authority to participate in the program and to recommend to the Chicago Department of Welfare acceptance or rejection of each application; (4) to recommend boundaries of neighborhood areas by which the rotating lists of dentists will be determined; (5) to receive suggestions from dentists and others in the community for improving the dental program; to receive and investigate complaints from dentists, patients, or the public regarding services rendered, and to make recommendations concerning their disposition to the welfare department.

Services which may be authorized by the dental examining unit include emergencies and those services required for the protection of the client's health and welfare. All types of preventive and restorative dental care are provided for children. Orthodontic treatment and the use of precious metals are excluded. Adults may receive operative dentistry, prosthetic dentistry for the repair of dentures, surgery, and X-rays when imperative for diagnostic purposes.

Operative dentistry is restricted to: (1) relief of pain and elimination of infection; (2) root canal therapy, in rare cases; (3) prophylaxis in connection with inflammation of soft tissues or the removal of heavy deposits of serumal calculus which endanger the health of the tissues; and (4) fillings of cement, amalgam, and synthetic porcelain. Dental care requiring surgery is limited to simple extractions, the removal of impacted teeth when necessary for relief from pain or for the protection of health, and treatment for fractured jaws. Special arrangements are authorized for the following types of emergency service: major oral surgery in emergency cases; dental care to bedridden patients when the need is acute and immediate; and partial or complete dentures or bridgework when necessary for reasons of health or of obtaining employment, where the lack of this service threatens some permanent new handicap, or where dentures or bridgework are essential to the well-being of the recipient.

During 1945 the dental examining unit assigned 2,912 persons to private dentists for some type of dental care. The total expenditures by the welfare agency for dental services, exclusive of the operation of the examining unit, amounted to \$47,763.27, or \$16.40 per patient. The number and types of treatments received by the relief clients during 1945 are as follows:

| <i>Type of Work</i> | <i>Number of Clients</i> |
|-------------------------|--------------------------|
| Extractions | 7,210 |
| Fillings | 4,921 |
| Prophylaxis | 1,622 |
| Full dentures | 502 |
| Partial dentures | 109 |
| Repair of dentures | 46 |
| X-rays | 47 |
| Others ^a | 165 |
| Total dental operations | <u>14,622</u> |

^a These services include oral surgery, post crowns, clasps, and root-canal therapy.

A large part of the dental services provided by the Chicago Department of Welfare is for the clients who are aware of their dental problems and request care. For a special group of children, this agency conducts an extensive health supervision program which includes, in addition to medical services, routine dental examinations and prophylaxis twice yearly, and dental care as required. The Children's Division of the Department of Welfare administers this program for children who are cared for outside of their own homes. In 1945 there were 1,200 of these children.

Reports by the dental examiners of the dental unit as to the adequacy of the services performed by the private dentists to whom the relief clients were assigned indicate that in 82.7 percent of the cases the authorized care was completed satisfactorily; in 13.1 percent what was done was satisfactory, but the work was incomplete; and in an additional 2 percent the work was not performed in accordance with the dental services specified by the examiner. In the remaining 2.2 percent the work done was considered unsatisfactory.

The Juvenile Detention Home, Bridewell, and Cook County Jail.—Each of these institutions employs a part-time dentist and has a well-equipped dental clinic. The present staffs have been in charge of remedial dental service in these institutions for a number of years, and, in the judgment of the survey representatives, they are well oriented to the need for proper dental care of the inmates. Dental services rendered are such as to maintain good dental health.

Clinics under voluntary welfare agencies.—The six dental clinics operated by voluntary welfare agencies in Chicago all provide services to preschool, school-age, and adult groups, with the exception of a boys' club. The clinic maintained by this club furnishes dental care free to its members, but provides no service to adults. In one of the clinics the patient pays in part or in full for all services obtained. The other clinics provide free services to patients who are unable to pay.

According to the reports from these clinics, dental care is available for young children as well as for the school-age and high school groups. In general, the services offered are reasonably complete, but information as to the number of children who receive care is lacking. From the data gathered and from a limited contact with the Chicago situation, it seemed unlikely to the survey representatives that many of the clinics actually rendered dental service to preschool children. Through the interest of the Council of Social Agencies of

Chicago, a special clinic for the preschool child was organized recently under the administration of The Salvation Army North Side Clinic.

The staffs of these welfare clinics include 28 dentists, 2 of whom are employed full-time by 1 of the clinics. Most of the dentists serve on a volunteer basis, but 3 are on salary and 1 receives fees for certain types of service (prosthetic). The six clinics offer 24 half-days of dental care each week. The number of periods scheduled by the different clinics varies from 1 to 11 half-days weekly.

With one exception, all these clinics offer some type of remedial dental service. The care in one clinic is restricted to extractions and X-rays. Usually the services include prophylaxis, extractions, and fillings.

Clinics operated by health agencies.—Service in these two clinics is limited to adults. A full-time dentist is employed in each, one agency paying a salary, the other having a fee commission arrangement. In one of these two clinics, services are provided without charge to patients unable to pay anything; other patients pay in full or in part. The second clinic charges a reduced fee for all services rendered. The two clinics offer a total of 23 half-days of care each week. Their dental programs provide both diagnostic and remedial services. The care available includes prophylaxis, extractions, fillings, X-rays, artificial dentures, and other forms of treatment. Each clinic owns a dental chair and dental unit and either has an X-ray machine or has arrangements for the use of one.

Homes for the chronically ill and aged.—Dental services are provided to patients in two homes of this type. Each home has a part-time dentist who is scheduled regularly for one clinic period each week. One home pays the dentist on a fee basis, and patients are charged in accordance with their ability to pay. In the second home the dentist serves without remuneration, and dental care is free. The type of care offered includes both diagnostic and remedial services. Full and partial dentures are provided by these clinics, and one is equipped for oral surgery.

DENTAL SCHOOL CLINICS The dental services provided by the three dental schools in Chicago serve a two-fold purpose. They are established primarily for the professional training of students and for the practice of dentistry under proper supervision. They also render direct services to the community by offering dental care at a minimum cost.

In the three dental schools, 28 dentists give full time to teaching in the clinics, and 93 serve part time. The clinics are open to the public 33 half-days each week, and all age groups are accepted for care. Their equipment includes 439 dental chairs and 9 X-ray machines. Each school also has a dental laboratory.

Dentistry for children is given emphasis in all the schools. Orthodontic services are offered by two. The children's clinics of these two schools have 46 dental chairs and during 1945 rendered service to more than two thousand children between the ages of three and twelve years. Specific information regarding facilities for children or the number receiving care was not available from the third dental college.

Statistics submitted by two schools indicate that a total of 15,453 patients were given some type of dental care during 1945. Of these, 2,060, or 13.3 percent, were children.

All the schools charge a fee for the care given, paid either by the patient or by the social agency referring him.

DENTAL SERVICES BY INDUSTRY Industrial dental clinics are defined as those located within an industrial area and supported wholly or partially by industry. Dental services rendered in such clinics are restricted to the employees of the industrial plant sponsoring the dental program.

A special effort was made by the survey representatives to obtain full information regarding the extent and the types of health services available to employees of industrial organizations in Chicago. Data for the survey were submitted by 1,399 companies. Regular dental services for employees were reported by four large industries, each having more than one hundred employees. None of the smaller plants reported dental service except on an emergency basis.

The four industries with organized dental programs maintain 6 clinics staffed by 2 full-time and 6 part-time dentists. Five of these dentists are employed on salary, and 3 are on a fee basis. One company reported a full-time dentist in charge of a dental clinic operated for employees needing dental care, but gave no further specific data.

Policies are determined in 2 plants by the director of the dental clinic, in 3 by the medical director, and in 1 by the welfare department. Different plants of the same company may vary with respect to the administrative control of the dental clinic. Expenses for the operation of the clinics are met from funds furnished by the company and from the fees charged patients. Care obtained is free in 2

of the clinics, and in the others is paid for by the employee, who is charged at a reduced rate.

In the five clinics for which information is available, a total of twenty-six half-days of care a week is provided. Complete dental services are offered in 3 of the plant clinics. In the other 2, the extent of the service available is restricted largely to diagnosis and consultations. In 1 of the latter, the care specified includes prophylaxis, extractions, oral surgery, and X-rays.

Each of the clinics is equipped with a dental chair and a dental unit; 1 has an X-ray machine. Equipment was paid for by the company in 2 of the clinics; in the others it was provided jointly by the company and the dentists in charge of the program.

The data on industrial medical and dental services presented in Chapter 32 indicated that relatively few of the large body of industrial workers in Chicago had access to an industrial dental clinic. Of the 594,455 employees represented in the 1,399 plants included in the industrial hygiene survey of Chicago and Cook County, only 40,537, or 6.8 percent, worked in plants where provision is made for dental care. Full-time dentists were available to 9,008 of the 40,537, and part-time dentists to 31,529.

An additional 9,728 employees in 13 plants may receive service limited to the provision of emergency treatment and the determination of the amount of necessary reconstruction required as a result of an accident. Dentists are reported to be "on call" to provide this service. The company permits the patient to have the needed dental work completed by a dentist of his choice.

FACILITIES AND SERVICES IN COOK COUNTY

The dental programs throughout Cook County, outside Chicago, place major emphasis on services for children. Most of these services are under the supervision of local or county health officers. In some instances the Illinois Department of Public Health allocates funds to meet the expenses of remedial dental care; in others, provision is made by the local boards of education or by special community organizations.

A total of 21 clinics or organized centers in Cook County provide dental services for children and/or adults. Not all of these were in operation at the time of the survey, but the physical equipment is available whenever qualified personnel can be obtained to carry on the program. These facilities are reviewed here according to the type

of administrative control—health departments, hospitals (tax-supported and voluntary), boards of education, and community organizations.

DENTAL SERVICE BY HEALTH DEPARTMENTS Nine communities currently have facilities for an organized dental program under the supervision of the Cook County Department of Public Health or of local health officers. In a number of these communities the service is limited to dental examinations of school children, with follow-up conducted on a dentist participation basis. As the program of each community differs in certain respects from those of the others, a general description is given of the type and extent of the services and the provisions made for remedial dental care in the various localities.

Cook County Department of Public Health.—At the time of the survey, physical facilities were available for a public dental health program in Des Plaines, Oak Forest, Robbins, Steger, and Wheeling, but because of the shortage of personnel none of these has been in operation since 1944. There is at present no dental officer on the staff of the county health department. A dentist trained in the field of public health was formerly the director of the county health department dental program. At the time the clinics were closed, a well-rounded program was under way in three of the communities, and plans were nearing completion to begin services in the other two. These clinic facilities were established especially for the community dental health program, with the exception of those at the Oak Forest Infirmary, which were intended primarily for the use of the patients of that institution. Through the co-operation of the director of the Oak Forest Infirmary, however, its dental facilities were made available to the health department dentist whenever they were not needed by the hospital.

During the years when the dental program of the county health department was functioning, the department operated three clinics on a five-day-per-week schedule (ten half-day periods throughout the school year). In addition to oral examinations, remedial dental care was provided for preschool, grade school, and high school children, and for certain adult groups—expectant mothers and venereally diseased persons. The offices of private dental practitioners were utilized to supplement the clinic facilities of the department in areas where they were needed.

Remedial dental services were administered under policies established by the Division of Public Health Dentistry of the Illinois

Department of Public Health. Dentists were paid on an hourly basis from funds allocated by the state health department.

Between 1944 and the early part of 1946 the only dental services maintained by the county were in connection with physical examinations of school children. With the resignation of the last dentist who had participated in the program, all dental services were discontinued.

Evanston Health Department.—The department serves as a coordinating agency for the proper functioning of the school dental program. All dental services received by the children are reported by their private dentists to the school authorities on a standardized dental report card developed in co-operation with a committee of local dentists. This card is sent to the parent with the request that the child be taken to a dentist for examination and whatever dental service he may require. The parent gives the card to the dentist who records on it the child's dental needs and the care given him. The card then is mailed directly by the dentist to the school and becomes a permanent part of the child's school progress record.

In addition to this regular program, the Evanston Health Department, in co-operation with the Division of Public Health Dentistry of the Illinois Department of Public Health and the Zoller Dental Clinic of the University of Chicago Clinics, is conducting a special long-term research investigation on the relationship of fluorine in the drinking water and tooth decay.

Oak Park.—The health department and the local dental society in Oak Park share jointly the responsibilities for the school dental program. All policies and the procedures to be followed are formulated by the dental society. The actual operation of the program is the responsibility of the health department. Dental services are limited to oral examinations of school children.

At the beginning of the school year, parents are urged to have their family dentists examine their children. The school sends a card to each home on which the parents can indicate the dental care completed for each school child or, in case no dental services have been obtained, can indicate consent to a dental examination at school. Local dentists, serving without remuneration, conduct the examination program.

Stickney Township.—The township of Stickney owns three complete dental offices and expects to construct two new buildings in which space will be provided for dental equipment. In April, 1946,

the township voted to establish a health center which will employ two dentists.

For a number of years the health department of Stickney Township provided remedial dental services for children whose parents were financially unable to afford this care, and also for indigent adults. The future program is not formulated yet, and at the present time no type of public dental service is available in the community.

Winnetka and Kenilworth.—The health officer of Winnetka, who also serves Kenilworth, determines the policies of the dental health programs in these adjoining villages in co-operation with the local dentists and the boards of education. The program has been in operation for sixteen years.

Annual dental examinations of all pupils from kindergarten through high school are required. At the beginning of the school year each pupil who has been examined by his family dentist presents a certificate signed by him, stating that all necessary dental care has been completed. Pupils without certificates are examined at school and referred to their own dentists for the needed dental services.

At the request of the health officer, the local dental society assigns dentists to the different schools to examine the children who fail to bring certificates. These dentists are paid an hourly fee for their services. The boards of education allocate funds to the health department to cover this expense. Children whose families are unable to pay for remedial care have the needed services provided for them through the Family Welfare Society.

School nurses follow up all cases requiring dental services, urging that remedial care be obtained or, where necessary, assisting the family to secure care through the proper channels.

DENTAL SERVICES BY HOSPITALS Four hospitals in Cook County, exclusive of Chicago, operate dental clinics as hospital departments. Three are tax-supported institutions for specific types of patients—veterans, the mentally ill, and the aged. The fourth is a nonprofit general hospital.

Hines Memorial Hospital.—This Veterans Administration hospital has a staff of 15 full-time dentists, who participate as a part of the general staff of the hospital on a regular salary basis. Complete dental services are provided free of charge to both inpatients and outpatients. The dental clinic operates 11 half-days per week. It is equipped with 18 dental chairs and units and 4 X-ray machines. The

personnel, other than dentists, includes 1 dental hygienist, 20 technicians, 7 assistants, 4 clerks, and 1 secretary.

Chicago State Hospital.—This hospital for the mentally ill has a department of dentistry with a staff of 2 full-time salaried dentists. The policies of the dental services are available to the patients in the institution. The clinic operates 11 half-days per week. Its equipment includes 2 dental chairs and units and an X-ray machine.

The Oak Forest Infirmary.—The dental clinic associated with this institution is for the aged persons who live there. Dental services are restricted to extractions. One dentist is scheduled for 2 half-days each week on a salary basis. The clinic has 2 dental chairs.

Evanston Hospital.—A dental clinic is maintained as a department of the hospital for adult inpatients and outpatients from the low income groups. Services are provided free to those who cannot pay for them. The patient meets part of the cost if he can afford it. The staff consists of 2 part-time dentists, who serve without remuneration. Dental services are available 1 half-day a week and are limited to extractions and X-rays. The clinic is equipped with 1 dental chair and unit. When X-rays are required, the general hospital equipment is used. A nurse assistant works with the dentist in the clinic.

DENTAL SERVICES BY BOARDS OF EDUCATION The dental programs of four Cook County communities are under the control of boards of education: Arlington Heights, Bellwood, Cicero, and La Grange. In three programs, the operating expense is included as part of the regular school budget and in the fourth program, it is met by a special public health committee.

Arlington Heights.—The dental service program of the Arlington Heights Schools has been in operation since 1930. Policies are determined jointly by the board of education, the local health department, and a lay organization known as the Public Health Committee. Funds are provided by the lay group.

Services available to all grade school pupils include examinations, prophylaxis, extractions, and fillings. The aim of the program is to determine the dental needs of school children and to have the required corrections made. Parents may make application to the school for dental care or children may be referred in connection with the follow-up of the school dental examinations.

The dental staff consists of 5 part-time dentists paid on an hourly basis. Remedial services are given in the private offices of the dentists.

Children whose parents are able to pay part of the fee are charged at a reduced rate; those who cannot afford to pay for the service receive free care. Eligibility for the reduced fee and for free service is determined by the school nurse.

Bellwood.—Dental care for school children is provided by the Board of Education of School District 88 at Bellwood. The school employs a nurse and a part-time dentist on a yearly salary. Operating expenses of the program are met by fees and by school funds. The dentist spends one half-day weekly during the school year in the school clinic. Dental equipment includes a dental chair and a dental unit. Prophylaxis, extractions, and fillings are provided for a fee to those who can afford to pay for service and are without charge to all other children.

Cicero.—The school dental program of Cicero is restricted to diagnostic services. A part-time dentist is employed by the local board of education on a salary basis. All school children receive oral examinations, and needy children are referred to the Cicero Welfare Center for remedial care. Efforts are made by the nurse and the teachers to have the parents take the children who need dental care to their private dentists.

La Grange.—School District 102 of Cook County, located at La Grange, maintains a dental clinic as a part of its regular school health program. Children who are not examined by their family dentists are seen by the school dentist. After the examinations are completed, arrangements are made for the children whose families cannot afford to pay private fees to receive the required dental care free.

Clinics are operated 1 half-day weekly during the school year. A part-time salaried dentist and a nurse are in charge of the program. The school owns 4 dental chairs and some laboratory equipment. The services provided include examinations, prophylaxis, extractions, and fillings. Eligibility for free care is determined by the nurse.

DENTAL SERVICES BY COMMUNITY ORGANIZATIONS In 4 communities dental programs are conducted by voluntary organizations either as a supplement to the school health program or as an independent service. Five part-time dentists are employed to provide free dental care for children of low-income groups.

Cicero Welfare Center.—This center maintains a dental clinic as a supplement to the regular dental program of the public schools. The policies of the clinic are determined by the local health depart-

ment, but the administration of the clinic is under the Cicero Welfare Center. Funds are allocated from the Cicero Community Chest to the amount of \$50 a month. The remainder of the operating expense is borne by the city government.

Dental care is provided for needy grade school and high school pupils. Referrals to the Cicero Welfare Center are made by the school nurse and by teachers, but eligibility for care is decided by the executive secretary of the center.

A part-time dentist gives 2 half-days each week to the program. He is paid a yearly salary. A nurse assists him during the clinic session. The dental equipment includes a dental chair and unit. Prophylaxis, extractions, and fillings are provided to school children. About 6 children are treated during a clinic period.

Evanston Junior League.—The Evanston Junior League operates a dental clinic for preschool and school children from the low-income groups. A small fee is paid at each visit.

The clinic staff includes 2 part-time dentists employed on a yearly salary basis, 2 dental assistants, and 2 clerks. Clinic sessions are held once a week. In addition to 2 dental chairs and units, the clinic has an X-ray machine. Prophylaxis, extractions, fillings, and X-rays are available to all children of low-income families.

Melrose Park.—St. Paul's Lutheran Church conducts a dental program for the school children enrolled in St. Paul's Lutheran School. The purpose of the program is to promote dental health education and to see that all children graduated from this parochial school have the needed dental corrections made before graduation. The agency reports that every graduate during the past seventeen years was free from dental defects at the time he left the school.

Kindergarten and school children are given free dental examinations. Follow-up is carried out through the joint efforts of the church group and the school authorities. The dental examinations are made by a local dentist on a voluntary basis. A nurse assistant is provided.

Wilmette Health Center.—Free dental care is extended to preschool, school and high school children whose families are financially unable to afford the services of a private practitioner. Dental funds are contributed by the official welfare agency of the village. The clinic operates on a schedule of four half-days weekly. One part-time dentist and a nurse are employed on a salary basis. Clinic equipment includes an X-ray machine, one dental chair, and a dental unit. Prophylaxis, extractions, fillings, and X-ray services are offered.

SUMMARY AND COMMENTS ON CHICAGO

There are 94 active dental clinics and 12 inactive centers in Chicago. Dental services are restricted to special cases or beneficiary groups in 17 of these and are limited to children in 53 of the others. The remaining 24 clinics provide dental care for adults and in most cases for children, mainly from the low-income group. Only 10 clinics, excluding those for special beneficiaries, offer services to all economic groups.

Both diagnostic and remedial dental services are rendered by 80 of the Chicago clinics. In 53 of these the care is available only to children, and in 11, to special cases or beneficiaries. Adults may obtain artificial dentures free or for a reduced fee at 18 of the dispensaries—11 of these serve the general public. Fairly complete services for school children, exclusive of the special case clinics, are provided by 64 clinics, 49 of which are administered by the Chicago Health Department. Three dental clinics give special attention to preschool children, and a number of others extend their services to this age group.

Exclusive of the full-time clinic staffs of the three dental schools, there are 233 dentists practicing dentistry in Chicago clinics. These dentists are on the staffs of 94 different clinics which provide care for 492 half-days per week. An additional 7 dentists have internship appointments in 3 hospital clinics.

GRADE SCHOOL DENTAL CARE PROGRAM Calculations from the dental needs' section of this survey indicate that there are approximately 291,353 white and 18,509 Negro children between the ages of 6-13, or a total of 309,862 school children requiring dental care of the permanent teeth each year. Of this group it has been reported that for the United States as a whole about 20 percent are classified as unable to pay for dental services.⁶

It is estimated that one dental clinician can give some dental care to about 100 children per month and complete 67 percent of the patients.⁷ If this figure is used as index, indications are that 24 more dentists need to be added to the present complement of 28 dentists, and the working year should be increased from ten months to twelve

⁶ John W. Knutson, "An Index of the Prevalence of Dental Caries in School Children," *Public Health Reports*, LIX (Feb. 25, 1944), 253-263.

⁷ Norman F. Gerrie, "The Quarterly Question," *Bulletin of the American Association of Public Health Dentists*, IV (July, 1944), 3-4.

months. These increases are necessary to render adequate dental care to the 61,970 children of families who fall in the low-income classification.

The objective of the dental care program is to make available to each child in grade school at least one dental examination per year, with provision for follow-up to ensure all necessary corrections. At the beginning of the school year all pupils in the schools should be given a dental health record card to take home to their parents. Parents should be urged to take their children to the family dentist for a dental examination and all necessary remedial services. The dentist, upon completion of all necessary corrections, should return the dental health record to the school, certifying that the child has been examined and that all remedial services have been completed. The classroom teacher should participate in provision of the follow-up services necessary to achieve 100 percent dental correction in all children. Pupils whose parents are in the low-income group should be examined by health department clinicians, and the necessary corrections should be completed in the school clinics.

SCHOOL DENTAL HEALTH EDUCATION PROGRAM The director of health education activities in the public schools of Chicago states that the high school student is being orientated gradually to the importance of dental health. There is, however, no evidence of an organized dental health education program in the grade schools. The results of the survey findings clearly emphasize the need for an intensive program of this type. The responsibility for the health instructions given in the classroom rests with the teacher, who should be supplied with proper dental health teaching materials by the Dental Hygiene Unit of the Chicago Health Department. At present, relatively few grade school teachers are trained adequately to conduct such dental health teaching. Opportunity should be provided to them and to the students in the Chicago Normal College to attend workshops on the fundamentals of accepted dental health teaching. It should be the direct responsibility of the Dental Hygiene Unit of the Chicago Health Department to organize and establish such a training program.

DENTAL SERVICES FOR PRESCHOOL CHILDREN The survey indicates that a number of dental clinics admit preschool children for treatment and provide reasonably adequate services. There are, however, no figures to show the number of children who receive these

services. A general feeling exists in the community that more facilities are needed. Three centers have been established recently for the treatment of preschool children.

The survey representatives are of the opinion that before a community program for young children is planned specific information should be obtained regarding the dental needs of preschool children and the extent to which present facilities are utilized. The impression of the survey representatives is that the few dental clinics organized, especially those for the younger children, are not being utilized to the fullest extent. It is possible that the clinics with case loads of older children and adults give little time to the dental needs of nursery school children. It is probable also either that proper parent education on the dental needs of the younger children is lacking, or else that strong enough emphasis has not been placed upon the necessity of taking a child for his first visit to the dentist by the time he has reached his third birthday.

DENTAL RECORDS There is no common system of record keeping among the dental clinics. Each has developed a system to meet its own needs. A substantial number of organizations with dental clinics were unable to give a uniform report on patients, operations, visits, and other information important in evaluating the dental services of the institution or agency and the benefits derived by the community from these services. A uniform record-keeping system should be adopted, and provisions should be made for ensuring consistency in its use.

FURTHER TRAINING OF DENTISTS ENGAGED IN DENTISTRY FOR CHILDREN The majority of full- or part-time salaried dentists in clinic programs for grade and preschool children, according to information submitted to the survey, had not attended post-graduate or refresher courses in dentistry for children. The professional personnel need to keep abreast of and informed on modern techniques and scientific developments in dentistry. Chicago, with three dental schools, has adequate facilities for promoting and organizing advanced instruction in dentistry for children.

HOSPITALS WITH DENTAL CLINICS Chicago has 77 voluntary and government hospitals of various sizes.⁸ About 75 percent, or 58 hospitals, provide no dental facilities for the treatment of either inpatients or outpatients. Of the 19 hospitals with dental facilities, 25 percent are tax-supported institutions.

⁸ Includes one Federal hospital.

Less than half these 19 hospitals provide complete dental services for both inpatients and outpatients. A high proportion, however, provide extractions, oral surgery, prophylaxis, and X-rays. Two hospitals include orthodontia and maxillo-facial surgery in their services.

The majority of hospitals have no internships available to recent graduates for furthering their professional training. In hospitals with dental facilities, only three have dental interns on the hospital staff.

None of the 19 hospitals in the Chicago area in which dental services are available meet all the minimum requirements outlined by the Committee on Hospital Dental Service of the American Dental Association.

THE COOK COUNTY HOSPITAL CHILDREN'S DENTAL CLINIC This hospital dental clinic is one of the largest and was the first established to provide dental care for the indigent cardiac and crippled children of Chicago and Cook County. The Chicago Dental Society Advisory Committee in 1923 worked with the Cook County Hospital in establishing the clinic and served in an advisory capacity concerning its policies.

For the first ten years, the dental clinic functioned effectively under this arrangement. It then had a staff of one supervisor and nine dental interns. Three dental interns were selected from each of the three dental colleges in Chicago and served in this capacity from 1 year to 18 months. After the expiration of the internships, the dental interns usually established a private practice, and a new group of interns was selected.

The Cook County Hospital Children's Dental Clinic functioned successfully under this co-operative arrangement until about 1933. At this time the internships were discontinued, and the clinicians were given permanent civil service status. The Chicago Dental Society at the same time no longer co-operated in the activities of the dental clinic.

A general feeling exists in the community that internships should again be made available, as was the policy during the first ten years of the dental clinic's existence. It is believed also that the Chicago Dental Society should revive its advisory services to the Cook County Hospital Children's Dental Clinic.

INDUSTRIES PROVIDING DENTAL SERVICES The survey findings indicate that the majority of industries in Chicago provide no dental services for employees. Of a total of 594,455 employees in the 1,399 plants of all sizes surveyed, only 40,537, or 6.8 percent, were provided

with dental services of any type. No industrial dental service was available to the remaining 533,918. Three large plants provide complete dental services for their employees on a reduced fee basis.

COMMENTS ON COOK COUNTY (EXCLUSIVE OF CHICAGO)

In Cook County outside Chicago the major part of the available dental service is for school children. There are a total of 15 centers where some type of dental program is in operation. Four of these are in hospitals, and the remaining 11 are specifically for children. In 5 of the latter the dental service is limited to school examinations with various forms of dentist participation with respect to both the diagnostic service and the follow-up care. Reasonably complete dental care for children is provided by three schools under the local boards of education and by three welfare agencies. With the exception of the dental clinic at the Evanston Hospital, all the dental clinics associated with hospitals are for the treatment of special cases—veterans, the mentally ill, and the aged. The Evanston Hospital maintains the only dental clinic in Cook County where the needy adult may obtain any dental care, and the services are limited to extractions and X-rays.

GRADE SCHOOL DENTAL CARE PROGRAM The Cook County Department of Public Health has at present no active dental care program. All the dental facilities under the direct control of this organization are now idle because of lack of funds and personnel to staff a dental division. As soon as adequate funds and personnel are available, these clinics should be staffed and a program should be put into effect whereby dental services can be given to the dentally needy children in Cook County.

Cook County has about 6,900 dentally needy children in the age group 6–13 who experience dental caries in the permanent teeth each year.⁹ The families of these children are in the low-income classification and are unable to provide the means for dental care. It is estimated that Cook County would need six full-time dentists on a twelve-month basis to render dental care to these children.

The objective of the dental care program is the same as that outlined in the comments for Chicago: To make available to each child in grade school at least one dental examination, with a plan for

⁹ Children with one or more permanent D.M.F. teeth, estimate based on the needs found in the Chicago school children.

follow-up of all corrections. The plan followed and the type of card used would be the same as those described for use in the Chicago schools.

It will be necessary for the dental director of the Cook County Department of Public Health to survey the county and establish fixed dental clinics in areas where the case load will be large enough to support the facilities. For smaller communities, it would be more economical and convenient to establish mobile clinics with portable equipment, which could be transferred from community to community.

SCHOOL DENTAL HEALTH EDUCATION PROGRAM A number of schools in Cook County teach dental health in the classroom; many others do not. Although relatively few schools in the county were included in the survey, the observations tend to indicate the need for such a program.

The dental health instruction phases of this program should be given in the classroom by the teachers who should be supplied with proper health teaching materials by the Dental Division of the Cook County Department of Public Health. All grade school teachers and students at the Chicago Normal School should be given an opportunity to attend workshops on the fundamentals of accepted dental health teaching. The Dental Division of the Cook County Department of Public Health should have the direct responsibility for the organization and establishment of such a training program.

DENTAL SERVICES FOR PRESCHOOL CHILDREN The survey did not include a study on the dental needs of the younger age groups. Neither did it include the clinical facilities available in the county for the treatment of the preschool children and the extent to which these clinics are used for their original established purposes. A detailed study should be made on the dental needs and clinical facilities now available for the treatment of this group.

ALL OTHER HEALTH DEPARTMENT DENTAL PROGRAMS There are some excellent dental programs with good supervision in villages, towns, and townships in the county. A number have been conducting good programs on a dentist-participation basis for fifteen years or more. The survey shows that a low tooth-loss rate has been maintained in one community as a result of its program of dental care for school children.

Nevertheless, there should be an over-all, co-ordinating agency

through which all necessary information should be channeled for the purpose of appraising the periodic effectiveness of the programs on a county-wide basis.

HOSPITALS WITH DENTAL CLINICS Only 4 of the 20 voluntary and tax-supported hospitals (including 1 under Federal control) in Cook County outside Chicago provide dental facilities for the treatment of both inpatients and outpatients. Two of the tax-supported hospitals extend complete dental services to patients, while one other governmental hospital limits its services to extractions. The one voluntary hospital in Cook County with dental facilities limits the services to prophylaxis and extractions on a one-half-day-per-week basis for adults and children of limited means. It is quite likely that more dental clinics in voluntary hospitals are needed in Cook County to extend dental care to adults and children in the low-income group.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. The Chicago Health Department shall increase its dental staff immediately in order to utilize the present dental equipment to its fullest capacity. Twenty-four more clinicians and one supervisor should be added to the staff for this purpose. In addition, such other personnel should be employed as are necessary to provide services for all children in public and parochial schools whose parents are unable to pay for dental services.

2. Attempts shall be made to make dental services available in the Chicago grade school clinics on a twelve-month basis.

3. Dental health education shall be made an integral part of the grade school health program. The Dental Division of the Chicago Health Department, in co-operation with the Chicago Board of Education, should be made responsible for furnishing the available dental teaching materials and should institute workshops for school teachers and students of the Chicago Normal School.

4. A further study of the dental needs of preschool children and the effectiveness of the present facilities in giving care to this group shall be undertaken immediately.

5. An inservice training program for professional personnel shall be established by all organizations and agencies rendering dental services to children.

6. A uniform dental recording system which would permit evalu-

ation of dental programs shall be established and placed in operation by all agencies in Chicago extending dental care to children.

7. The need for dental interns in hospitals shall be stressed vigorously, and professional supervision and instruction provided for them.

8. All hospitals with dental personnel and facilities shall put into operation the basic requirements for a department of dentistry outlined by the Committee on Hospital Dental Service of the American Dental Association.

9. The Chicago Dental Society shall take steps to improve its advisory services to the Cook County Hospital Children's Dental Clinic.

10. Industries shall be encouraged to provide the following services to employees: preplacement and periodic oral examination and diagnostic services for all employees; emergency dental treatment, including the treatment of occupational injuries and diseases; treatment of oral sepsis; education in dental health, and the encouragement of periodic and regular dental care.

RECOMMENDATIONS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO)

It is recommended that:

1. The Cook County Department of Public Health shall appoint a dental director and five clinicians to staff the idle clinics under its jurisdiction.

2. All official health agency dental programs in Cook County be co-ordinated by the Dental Division of the Cook County Department of Public Health.

3. Dental health education as an integral part of the grade school health program should be expanded. The Dental Division of the Cook County Department of Public Health, in co-operation with the educational authorities, should be made responsible for furnishing proper teaching material and for organizing workshops for the teachers.

4. A further study of the dental needs of preschool children and the facilities available for their treatment should be undertaken as soon as a dental division is established.

5. Inservice training programs for professional personnel should be established by all organizations and agencies which are rendering dental services to children.

6. A uniform dental recording system which would permit evaluation of dental programs should be established and placed in operation by all agencies in Cook County which are extending dental care to children.

7. Industries should be encouraged to provide the following services to their employees; preplacement and periodic oral examination and diagnostic services for all employees; emergency dental treatment, including the treatment of occupational injuries and diseases; treatment of oral sepsis; education in dental health; and encouragement of periodic and regular dental care.

NUTRITION SERVICE

by *Helen E. Walsh*

THE EVIDENCE on nutritional needs in the Chicago-Cook County area presented in this chapter was gathered from published reports of studies and from information on the results of unpublished studies made available to the Chicago-Cook County Health Survey. To obtain the data necessary to prepare a factual report on the nutritional status of the people in the Chicago-Cook County area would have required a survey of a representative sample of the population, which was not possible within the time period available for study.

For the Chicago area the source material used was: (1) a study by the Elizabeth McCormick Memorial Fund¹ based on physical examinations and dietary records of 7,362 children representing widely distributed socio-economic levels; (2) laboratory findings on vitamins C and A determined in work carried on at one of the Chicago Health Department clinics and at Cook County Hospital; (3) the dietary records of about one hundred working girls obtained by the Douglas Smith Fund, and (4) studies conducted at the University of Chicago. From these university studies, Blair, Roberts, and Greider found that during the time institutional diets were supplemented with all foods necessary to bring a group of children up to the usually recommended dietary pattern, they averaged 140 percent of their expected gain in weight. In the period before the diets were supplemented the group averaged only 61 percent of its expected gain in weight. The gains for heights followed a similar pattern.

In reviewing all these studies at a meeting in Chicago in 1944,² Dr. E. M. Koch concluded from the findings available "*that inadequate diets and sub-optimal nutrition are as prevalent in the City of*

¹ Martha Crumpton Hardy, and others, "Nutritional and Dietary Inadequacies among City Children from Different Socio-Economic Groups." *Journal American Dietetic Association*, XIX (March, 1943), 173-181.

² Elizabeth M. Koch, "What Is Chicago's Nutrition Problem?" *Journal American Dietetic Association*, XXI (April, 1945), 214-217.

Chicago as in any other section of the country where surveys have been made. That these conditions are more common among low income groups, but are disconcertingly frequent among all classes. That ignorance of what constitutes a good diet is probably the most important contributory cause, but faulty dietary habits established in youth are also a factor."

More recent information on the dietary habits of Negroes in South Chicago contained in theses prepared at the University of Chicago,³ substantiates Dr. Koch's conclusions.

Even less information on nutritional status was available for the Cook County area (exclusive of Chicago). At the request of the Chicago-Cook County Health Survey staff, the Cook County Department of Public Health summarized findings on the nutritional status of school children examined by the school health director during 1945. Records of 235 children representing families from an average income group were analyzed. The results show that in the judgment of the examining physician half of the children were in a fair or poor nutrition state or were obese.

Reports on the dietary habits of a limited number of school children from the rural and suburban areas were also secured. The sources of information were a survey conducted by school teachers on the kinds of breakfasts children were served and analyses of dietary records obtained by nutritionists in interviews with school children.

The survey of breakfasts was conducted in 1944 in a community where incomes are well above average. Records were available for 650 pupils. As judged by the standards used, a relatively small proportion of the pupils were served a "good" breakfast before coming to school. The breakfasts of 65 percent of the pupils were considered to be either "fair" or "poor."

In connection with a special posture conference in 1946 in which the pupils from five county schools participated, dietary records of 1,283 children were obtained. According to accepted standards, 76 percent of the diets of these children were rated as fair or poor.

Nutritional deficiencies become apparent more readily in dealing with the sick, and they often complicate the course of recovery, especially in patients coming from low-income groups. Recent studies in

³ Eva Gertrude Boggs, *A Survey of the Nutrition of Colored Families in Chicago*. University of Chicago, 1929; unpublished Master's thesis. J. Coleman, *Dietary Habits and Attitudes of High School Freshmen*. University of Chicago, 1946; unpublished Master's thesis.

two Chicago hospitals tend to give scientific support to this observation.

The results of these very limited studies of the dietary and health status of certain groups in the Chicago-Cook County area indicate that a nutrition problem exists, although its extent has not been defined. The situation needs further study and investigation by health and welfare agencies and by research and medical institutions.

NUTRITIONAL ACTIVITIES IN CHICAGO

To obtain as complete a picture as possible of the community nutrition activities in Chicago, representatives of the Chicago-Cook County Health Survey interviewed the persons responsible for nutrition programs in every agency and organization in the area known to include some nutrition work as part of their over-all program. Information was obtained from both official and voluntary agencies. The nutritional activities of dairies, public utilities, national trade associations, and food firms were reviewed also.

OFFICIAL AGENCIES The five official agencies in Chicago which include some food service or nutritional activity in their over-all programs are the Chicago Health Department, the Board of Education of Chicago, the Municipal Tuberculosis Sanitarium, the Cook County Hospital, and the Chicago Department of Welfare. Only one of these agencies, the Chicago Department of Welfare, has an organized nutrition program conducted by home economists. The other four give a very small amount of time to diet instruction as a part of some other service, usually in connection with medical care, nursing service, class work, or food service.

Chicago Health Department.—There is little evidence of recognition of the importance of nutrition in community health in the department's program. No attempt is made to inform the general population in Chicago of the enormous amount of data on the subject now available or to determine the nutritional status of the various population groups in the city. Nutritional activities in the department appear to be confined to the giving of diet instruction at the child welfare stations operated by the Child Welfare Section of the department, the employment of dieticians in the Municipal Contagious Disease Hospital and the Chicago Intensive Treatment Center (both operated by the health department), and the provision of mother's milk at no charge for immature, premature, and sick babies. Pediatricians assigned to the ninety-eight weekly well-baby confer-

ences and the twenty-four weekly maternal clinics give diet instruction, using printed diet sheets. Whatever instruction is given on food preparation is provided by the public health nurses in their follow-up visits to the homes of patients.

The nursing section of the health department made no provision at the time of the survey for staff education in nutrition. In 1944, however, at the instigation of the Chicago Nutrition Association, two elementary nutrition courses were given for supervisory and staff nurses at the University of Chicago. Although attendance was voluntary and classes were held after working hours, many nurses took these courses.

The dieticians at the Municipal Contagious Disease Hospital and the Chicago Intensive Treatment Center are in complete charge of the food service in those institutions. However, they have developed no educational program in nutrition for the patients in these institutions.

Board of Education of Chicago.—Nutritional activities and food service under the Board of Education are limited to some food and nutrition instruction in the health, home mechanics, and home economics classes; a feeding program for underpar children, and a school lunch program. None of these activities is available to all members of the school.

No organized health or nutrition instruction is offered below the seventh grade. If any instruction in the value of food and the importance of establishing good food habits is given, it is integrated into the regular courses by the teacher. Since it is not required, the extent to which it is done depends on the knowledge and the interest of the teacher.

The Bureau of Physical and Health Education is responsible for the contents of the health courses in the elementary and high schools. The physical education instructors are required to have a bachelor's degree, with a major in physical education.

Direct health instruction and a course in home mechanics is given all seventh and eighth grade students in 150 of the 333 elementary schools. At this age, eating habits have been established and are hard to change. The health classes meet once a week for a 30- to 45-minute period. A review of the outline of twenty-two suggested topics for health classes in the seventh and eighth grades indicated that seven of them related to nutrition. In the 183 elementary schools in which

no direct health instruction is offered, some attention is given to health teaching in the regular science classes.

Home mechanics is an eight-unit course with one unit on food. Special training in home mechanics is required of the home mechanics' instructors. This training must have included two credit hours in nutrition and six credit hours for a course in food, including a lecture and laboratory work.

Every high school boy and girl must participate in one 40-minute period of health instruction weekly each semester. There are six suggested units in the health study course each year. In the first year, six refer specifically to food and nutrition; two units are devoted to the subject in the second year, one of which is called the "Hygiene of Nutrition"; the third- and fourth-year courses each have three food and nutrition units.

The Bureau of Physical and Health Instruction employs neither a home economist nor a nutritionist to assist in integrating the isolated instruction. No consultation service has been arranged with the Division of Household Arts.

While 38 of the 41 high schools employ 175 home economics teachers and offer home economic courses, these courses are elective, and, unfortunately, by no means all the girls and very few boys take them. During the first semester of 1945-46 only 10,995 students out of the approximate total high school enrollment of 103,003 took the three home economics courses which emphasize food and nutrition: 1,829 students in the 60 home arts laboratory courses for freshmen; 5,594 students in the 194 food preparation classes for sophomores (two semesters); and 3,572 students in the 115 home management classes for juniors and seniors (one food unit).

The special program for children physically below par in the Chicago Public Schools has been operated since September, 1940. During the school year 1945-46 thirty-two of the 333 elementary schools carried this program for 2,800 children. A rest period on cots provided with blankets is substituted for gymnasium or playground exercise, and during the school day each child is served three half pints of milk and a hot lunch.

Physicians on the field staff of the Municipal Tuberculosis Sanitarium select the children on the basis of examination findings. Field nurses from the sanitarium supervise their activities and check their weights periodically. The children receive corrective medical serv-

ices from the various clinics in the city. Sufficient evidence was not available to evaluate the benefits of this special program in terms of general health improvement.

The Business Department of the Board of Education operates a Bureau of Lunch Rooms. Its central office staff consists of a director, an assistant director, a purchasing agent, an equipment specialist, and a test-kitchen supervisor. There are 5 field supervisors (4 women and 1 man) and 182 school lunch managers.

The 5 field supervisors are college graduates, 2 of whom were formerly home economics teachers. It was impossible to secure information about the educational background of the other 3 supervisors.

The training and experience of the school lunch managers vary greatly. Some have had home economics training, and others, business experience. A few have grown into the job. An effort is made to give inservice training to the managers, cooks, and all workers in the school lunch units. The test-kitchen supervisor, a dietitian, holds monthly demonstrations and classes for the school lunch managers and cooks.

Records of the Bureau of Lunch Rooms indicate that the 182 school lunch units serve 28 percent of the total school population. As soon as materials and equipment are available to provide sufficient facilities, it is hoped that all schools may have these units.

The Bureau of Lunch Rooms participates in the Federal School Lunch Program by serving Type "A" lunches to 63 percent of the total high school membership, or 64,892 students; Type "B" lunches to 32,894 elementary school pupils, or 13 percent of the elementary school membership; Type "C" lunches (milk only) to 60,920 elementary students, or 25 percent. The program has not been used as an integrated educational activity by the school, but is simply a feeding program.

The Municipal Tuberculosis Sanitarium.—The 2 dieticians employed in this institution are responsible mainly for the special therapeutic diets, averaging 175, approximately 17 percent of the patient load; the children's diets, averaging about 35 per day; and 1 or 2 infant formulas. The dietitians also assist with menu planning for the general diets, but they have no responsibility for the general food service or the main kitchen. All food is purchased by a purchasing agent. The failure to give the dietitians responsibility for the general food service and so to ensure the adequacy of the diets served all the patients seems to indicate that their services are not

utilized as fully as they might be. While the dietitians instruct patients on special diets when they are discharged, no nutrition instruction is given to other patients.

A nutritionist has never been employed to work with nurses or clinic patients in the six dispensaries operated by the Municipal Tuberculosis Sanitarium. The physicians give the patients printed diet lists, which are interpreted, if at all, by the dispensary nurses. No provision has ever been made for giving the dispensary nurses any instruction in nutrition until recently, when it was arranged to have a nutritionist from the Tuberculosis Institute of Chicago and Cook County work with them one day each week.

The Cook County Hospital.—The nutrition clinic maintained by the hospital as a branch of the general medical clinics to render dietary service to outpatients is considered to provide a creditable service. A full-time dietitian is in charge, and one or two student dietitians from the hospital serve in the clinic each month on a rotating basis. During May, 1946, 297 patients were seen and given special nutrition instruction.

The Chicago Department of Welfare.—The Service Bureau of the department has a Home Economics Division staffed by five home economists. This division is responsible for (1) developing the standard budget on the basis of which assistance grants and eligibility for assistance are determined; (2) recommending adjustments of allowance schedules to price changes, which involves periodic collection of information on the prices of food, clothing, and household items; (3) calculating the costs of therapeutic diets and preparing authorizations for their use; (4) planning and conducting nutrition education programs, which include preparation of exhibits for clinics and waiting rooms, food classes for clients, leaflets on abundant foods, and educational materials.

Home economists are assigned as consultants to the Family Division and the Children's Division of the Service Bureau to interpret the standard budget, to handle special diets, and to assist on individual family management problems. They assist also with inservice training programs.

One full-time and one part-time home economist are assigned to the Children's Division as nutritionists to interview all foster mothers concerning the diet of the child boarding in the home and to make recommendations.

The Convalescent Home operated by the Chicago Department of

Welfare employs a full-time dietitian who is responsible for: (1) meal planning, including therapeutic diets, (2) instructing the patients in the use of therapeutic diets, (3) directing the activity of the food preparation and food service unit, and (4) requisitioning necessary foods, supplies, and equipment. The director of the Home Economics Division gives functional supervision to the diet at the Convalescent Home.

The program of the Home Economics Division is quite flexible, and additional staff members have been employed when needed. At present the division is well staffed and provides an adequate program for the case load carried.

Voluntary agencies.—Seven voluntary agencies and organizations in Chicago have organized nutrition services. Eight others include nutrition only as a part of some other service and employ neither nutritionists nor home economists. Thirteen voluntary hospitals operate nutrition clinics in their outpatient departments. The nutritional activities of each agency are described separately in the following paragraphs. The nutrition clinics in the outpatient departments of hospitals are summarized for the group as a whole.

American Red Cross, Chicago Chapter.—This chapter includes not only the area covered by the Chicago-Cook County Health Survey but also Du Page County and the southern half of Lake County. The nutrition service of the chapter has a full-time nutrition director, and 3 professional assistants with nutrition training. Seven paid instructors are available on call, and 101 instructors are on the active volunteer list. The canteen staff consists of a trained supervisor, a kitchen supervisor, and 3 helpers. Volunteer assistance varies from day to day.

The all-time objective of the nutrition service is the improvement of the nutrition of all people in the chapter area. The program attempts to accomplish this end through (1) nutrition courses of various lengths for adult groups, college students, and boys' and girls' clubs; (2) training of volunteer workers, which includes a "lay leader training program"; (3) community organization to find and meet such needs; (4) a number of Junior Red Cross nutrition committees; (5) talks, radio broadcasts, and newspaper publications; and (6) cooperative efforts with other departments in the chapter.

Approximately 47 of the 215 communities in which there are Red Cross committees have nutrition chairmen who are instrumental in keeping the services of the nutrition department before the people of

the community and in organizing nutrition classes. The nutrition service is responsible for the management of the stationary canteen, which provides lunch for employees at the headquarters building, as well as for the major food purchasing for emergency feeding of the voluntary canteen corps. The service also publishes a monthly bulletin for instructors and nutrition chairmen. Menu suggestions, recipes, and grocery order materials are prepared for the Red Cross Home Service Department to use with family food budgets. In a limited number of cases, where guidance on food-money management or food-habit training is needed, the nutritionist visits the home or consults with the caseworker.

Back of the Yards Neighborhood Council.—This council was formed in 1939 by groups living in the meat packing house area. Their enthusiastic campaigns have brought, through Federal and state aid, free milk and hot lunches to the parochial schools in this area. In 1945 the council sponsored school lunch programs in a nursery, a settlement house, and 84 elementary and high schools. These school lunch programs are independent of those under the supervision of the Board of Education of Chicago and the Archdiocese of the Chicago School Board. Of the 86 programs sponsored by the council, 19 served Type "A" lunches to 67,970 children, and 67 the Type "C" (milk only) to 295,474 children.

The Back of the Yards Council has rendered a needed service to the children "Back of the Yards" through its free milk and hot lunch program. The job will not be complete, however, until the school lunch program is used as a laboratory for developing good food habits that carry over into the home and until the children understand what nutrition means in terms of good health.

Catholic charities and schools of the Archdiocese of Chicago.—The Catholic Charity Bureau does not employ a home economist, although it recognizes the need for such service. Its case workers, who co-operate with the Chicago Department of Welfare in the supervision of Catholic families and individuals on public relief, are, however, free to seek assistance on family management problems and special diets from the home economists on the staff of the welfare department.

No nutritionist is employed by the schools of the Archdiocese of Chicago, but the assistant superintendent is eager to have a nutrition specialist work with the teachers at the fall teachers' institute on methods and techniques for integrating nutrition education into

the established curriculum. Nutrition programs already have been started in schools under the supervision of two supervisors interested in nutrition. Some nutrition education is also included in the health and science courses given in the schools three times a week.

Out of 403 parish schools in the Archdiocese, about one third (123 in Chicago and 12 in the county) participate in the Federal School Lunch Program, in most cases by serving the Type "C" lunch (milk only). Only eleven schools in Chicago and four in the county serve the Type "A" lunch.

Since the school lunch program and the teaching of nutrition in the Catholic schools are rather new programs, much guidance and technical assistance is needed from trained home economists if the full benefit of the programs is to be realized.

The Central Service for the Chronically Ill.—This service, which is under the auspices of the Institute of Medicine of Chicago, was established to foster adequate care for the chronically ill. The home economist employed as a consultant formulates standards for the kind, quality, quantity, and reasonable cost of the various services and supplies necessary in the care of the chronically ill.

Chicago Nutrition Association, Inc.—From early in 1942 to the end of 1945 leading Chicago food and nutrition scientists and educators planned and put into action some twenty major projects which were an outstanding contribution to the war-time needs of Chicago. Recognizing the great benefits that can come to a community from organized effort, the war-time committee was recently incorporated as the Chicago Nutrition Association, a nonprofit association in the State of Illinois.

The objective of the association is to improve the nutritional status of the people of greater Chicago by increasing public understanding of the importance of good nutrition and health and by disseminating authentic information about food and nutrition through existing agencies.

The program of work outlined for 1946-47 is as follows:

1. To co-operate with national, state and local organizations in promoting programs which would affect the food supply and general nutrition of the people of Chicago.
2. To study the needs for nutrition education in Chicago and Cook County and make plans for filling the gaps by
 - a. encouraging employment of personnel trained in home economics to carry on nutrition services.
 - b. demonstrating need for services until an established agency will assume responsibility for such service.

3. To promote and stimulate nutrition education in Chicago and Cook County in

- a. schools, elementary and secondary, by planned and co-ordinated nutrition programs, including school lunch.
- b. organized groups such as industry, men's and women's organizations, health councils, etc.

During the past three years a full-time executive secretary who is a nutritionist has been employed. Her services were financed for two years by the Federal Government, and for the past year, by the Chicago Nutrition Association, partly through membership fees. She has acted as the liaison person with the community and has interpreted the work of the committee to organizations and individuals.

Chicago is fortunate in having outstanding nutrition leaders in the field who are interested and willing to give professional and financial support to a community educational endeavor to improve the nutritional status of the people of greater Chicago.

Council of Social Agencies of Chicago.—The council has never employed a nutritionist or home economist on its staff to assist health and welfare member agencies with food and nutrition problems. Yet a considerable portion of the funds allocated by the Community Fund of Chicago, Inc., to the member agencies of the Council of Social Agencies are spent on food, either for children who receive relief assistance or by institutions which care for the aged, convalescent homes, hospitals, clinics, and the various other health and welfare agencies which make up the council's membership.

At present the Family and Child Welfare divisions and the Health Division of the Council of Social Agencies use nutritionists and home economists from member agencies to set up and review periodically the Chicago Standard Budget and to assist member agencies with food management and nutrition problems. The assistance given by these member agencies has been excellent. It has been limited, however, to certain age groups. It is recommended that the Council of Social Agencies be encouraged to request a member agency to assign a full-time nutritionist or nutritionists to its staff to develop and direct a consultant service on food and nutrition for those member agencies and institutions now without such service. Member agencies and institutions of sufficient size to warrant employment of a full-time nutritionist and dietitian on their own staffs should be given this service on a demonstration basis only.

Elizabeth McCormick Memorial Fund.—The child health program conducted by this agency includes extensive work in nutrition.

Nutrition education is provided through group meetings for adults and children, individual consultation and guidance, preparation and distribution of suitable materials, reading and loan library service, including preparation of bibliographies and book reviews on selected subjects. The fund's research and special investigations indicate local needs. Since 1909, when the Elizabeth McCormick Memorial Fund helped to establish an open-air school program in Chicago, it has been engaged actively in field investigations, experimental research, and demonstration projects centered around nutrition and related child health problems. Services of the fund are not confined to Chicago and Cook County. The major part of its program, however, is in Chicago. Most of the nutritionist's activities are provided on a demonstration basis. The McCormick Fund employs six full-time nutritionists: three work with children in its extended health supervision program for child welfare; one nutritionist gives full-time consultation service to child-caring agencies; the other two supervise nutrition activities in nursery schools in the area.

During 1945 the health supervision program served 707 children from the three following agencies: Cook County Bureau of Public Welfare (aid to dependent children), Family Service Bureau of the United Charities, and the Family Service Division of the Chicago Department of Welfare. This service consisted of: (1) individual instruction for mothers and children attending the regular pediatric examinations to which clients of the three agencies could be referred; (2) consultation with case workers of these agencies on nutrition problems; (3) home visits for conferences with mothers; (4) periodic bulletins featuring low-cost menus and recipes for distribution to families and case workers; (5) selection and preparation of timely information and educational material for bulletin boards in offices of case work agencies; (6) monthly marketing bulletins for mothers whose children have been examined within the year.

Services for the Chicago Department of Welfare were expanded late in 1945 to provide a more complete preventive health program. The present program offers broad opportunities for nutrition education through frequent conferences with nutritionists, pediatricians, clinic nurses, and co-operating dentists and social workers of the Chicago Department of Welfare.

In connection with the clinic nutrition programs sponsored by the Health Division of the Council of Social Agencies, the Elizabeth McCormick Memorial Fund provides technical consultation service

to nutrition clinics in hospitals. During 1945 ten nutrition clinics supported by the Community Fund of Chicago received this service.

Advisory services to institutions caring for children are available on request of the agencies or referral from the Council of Social Agencies or from the Child Welfare Division of the McCormick Fund. These requests may be initiated by the individual institution which is aware of its need for assistance or by referral by supervising city or state child welfare agencies. Services include (1) intensive and detailed dietary surveys, (2) periodic reviews to determine progress, (3) evaluation of menus, (4) help in planning nutritionally adequate meals, (5) guidance in buying, preparing, and serving food. In addition, conferences are held for superintendents and other staff members of children's institutions in the Chicago area. All contacts with staff members in the individual homes, however casual, are utilized as a means of promoting nutrition education. Appropriate material is sent periodically to heads of institutions on subjects of timely interest, such as food shortages or the abundance of food. In 1945 twenty-seven agencies in the Chicago area, exclusive of summer camps and school lunch programs, received assistance on their dietary and health programs. Approximately 1,400 children reached in this program received similar services.

In its nursery school program the McCormick Fund has assisted in maintaining accepted standards for group care of preschool children through supervision and consultation services. In 1945 menu service was provided for four private and twenty-three public nursery schools, with health programs under the supervision of the fund, and for eleven additional nursery schools. The nutritionists also served as consultants to the nursery school teaching staff with regard to meal-time schedules and procedures, feeding problems, special diets, and marketing.

Lectures in nutrition for young children are given as part of training courses for nursery school teachers and for volunteer child-care aides. This service is also provided for staff personnel and for parents of preschool children.

Estimated enrollment during 1945 in the nursery schools receiving nutrition service was 3,150 children. This number included 150 in the 4 private nursery schools, where an intensive health program has been in operation for years, 500 in the 11 private nursery schools receiving menus and nutrition consultation for both staff and parents, and 2,500 in public nursery schools.

The Elizabeth McCormick Memorial Fund's research and special investigations' program has provided the only large-scale study of nutritional status in this area; however, further study of the situation is needed.

Infant Welfare Society of Chicago.—The nutrition program of this agency is carried at present by a reduced staff: two full-time nutritionists and a nutrition supervisor. Nutrition service is provided to clients in both the twenty-one infant welfare stations maintained by the society and their homes. Nutrition education includes the entire family as well as the persons registered at the infant welfare stations. During 1945, 10,207 expectant mothers, infants, and children under six years of age were served.

Follow-up work is carried on either by the nutritionists or by the public health nurses on the agency's staff, with the advice of the nutritionists. The nutritionists are responsible for staff education, inservice training programs, and conferences with staff nurses, which give an opportunity for the discussion of feeding problems.

The nutritionists provide menus for the nursery schools at Hull House, Chicago Commons, Emerson House, and Newberry Center. This service includes consultation as to feeding problems, group education, and supervision of meal preparation.

In normal times the society maintains a play school staffed by a nutritionist. A nurse devotes full time for one month to this school, thus receiving practical experience in child management, food purchasing and preparation, meal service, and an opportunity to develop and carry on an intensive project in health education.

Jewish Social Service Bureau.—The bureau employs a full-time trained home economist whose responsibilities are at present limited to special diet service, individual consultation service with case workers, housekeeping service for agency cases, and emergency care of the Jewish group. The home economist also talks individually with all new case workers regarding the policy of the Jewish Social Service Bureau with respect to the budget used for determining assistance grants. At present there is no organized program for staff education, but plans are being made to establish one in the fall.

Lutheran schools (Board of Christian Education).—According to the Cook County Board of Education, thirteen of these schools are serving school lunches. Some nutrition education is included in the general health classes. Guidance in the further development of these programs is needed.

Tuberculosis Institute of Chicago, and Cook County.—A nutritionist was added to the staff of the institute on March 1, 1946. Her services to date have been limited to demonstrations on nutrition education to teachers and students in the county school area and staff education with institute nurses. In the summer of 1946 she was a member of the staff of the General Education Workshop at Northwestern University.

In a statement prepared by the institute concerning its present and future program, the following recommendation was noted: "Develop and maintain a community and school nutrition program in Chicago and Cook County in co-operation with the official and voluntary health agencies."

Since the nutrition program of the Tuberculosis Institute is in the planning stage, serious consideration should be given to a program that would reach persons not served by existing agencies. The office and factory workers between the ages of 18 and 35 are a vulnerable group that have been overlooked by the majority of agencies. This group could benefit greatly by nutrition information presented in a practical and interesting way.

Salvation Army; Family Welfare Department.—At the present time the department is carrying 400 cases. No inservice or staff education in food or nutrition is given for case workers. Some consultation service on individual family food problems is available to case workers from the nutritionist at the Salvation Army Free Clinic.

United Charities; Family Service Bureau.—At one time, a home economist was employed by the bureau, and at present some consideration is being given to employing one on a part-time basis. Last year 11,900 families faced with some economic or social problems were given assistance by the United Charities.

A nutritionist from the Elizabeth McCormick Memorial Fund gives some consultation service to mothers and case workers in two district offices in connection with the health services the fund provides for children from three to sixteen years of age seen regularly by no other health agency. The Family Service of the United Charities conducts no regular program of staff education in nutrition for its case workers.

Visiting Nurse Association of Chicago.—At present the staff nurses are giving some instruction on diet and food preparation to their clients; however, the service is very limited. No provision has been made for inservice training or staff education in nutrition.

Young Women's Christian Association.—The Association employs five part-time nutritionists to assist in the medical program of its Health Education Department. Last year, 5,000 medical examinations were given to working girls participating in Y.W.C.A. programs. A nutrition history was taken as part of the medical examination, and, if indicated, the girl was referred to the nutritionist for diet consultation.

During the past year four volunteers gave five-minute lectures on food and nutrition to the various "Y" clubs and reached 9,717 women between 18 and 35. Movies on nutrition were shown to business and professional women's organizations, factory and household worker groups, and women's clubs. Cooking classes stressing marketing and meal preparation have been given, including at present a class for war brides from twelve different countries.

OUTPATIENT DEPARTMENTS OF VOLUNTARY HOSPITALS The Committee on Health Needs of the Council of Social agencies in 1943 recommended a program for the expansion of nutrition services in the outpatient departments of voluntary hospitals. The Community Fund of Chicago, Inc., accepted major financial responsibility on a demonstration basis.

Under this program the number of nutritionists serving in outpatient clinics (voluntary and tax-supported) increased from 8 in 1942 to 21 in 1946. The activities of the nutritionists, limited before 1943 almost entirely to instruction of patients on therapeutic diets, now also include teaching of normal nutrition to clinic patients. While individual instruction is relied upon as the basic method, extensive use is made of group instruction. A staff member assigned by the Elizabeth McCormick Memorial Fund provides technical help to the outpatient clinics in developing the nutrition programs. Case records are kept by the nutritionists and made part of the patients' records. Particular emphasis is placed on interesting staff physicians in using the nutritionist's service.

In addition to the program in the 13 voluntary clinics, two tax-supported hospitals—the Cook County Hospital and the Research and Educational Hospitals of the University of Illinois—each employs one nutritionist on its outpatient department staff.

The 13 voluntary and 2 tax-supported outpatient services reported individual nutrition instruction to 16,304 persons in 1945, with a total of 39,520 individual interviews, or an average of 2.4 interviews per person. They also reported 1,128 group instruction sessions with

an average attendance of 9 persons at each session. An increase of approximately 25 percent in the volume of service is reported for 1946. Six outpatient clinics also provided training opportunities to a monthly average of about 30 students.

BUSINESS ORGANIZATIONS The Borden and the Bowman dairy companies both have home economics departments, each staffed by a home economist, which provide information directly to consumers about the nutritional aspects of milk and methods of preparation. The Milk Foundation, Inc., employs two home economists who conduct an educational program for homemakers and teachers in the Chicago-Cook County area. Educational materials and visual aids are made available for consumer groups and teachers.

Both the Commonwealth Edison Company and the Peoples Gas, Light, and Coke Company operate home service departments. The Commonwealth Edison Company employs 62 trained home economists and the Peoples Gas, Light, and Coke Company, 15. The primary purpose of these home service programs is to acquaint homemakers in metropolitan Chicago with the home uses of electrical and gas equipment and appliances and the proper handling of foods from the market to the table by means of lectures, demonstrations, slides, films, and other visual aids. Educational materials, including menus and recipes prepared by the staff, are also distributed.

The national trade associations and food firms, with headquarters in Chicago, employ trained nutritionists and home economists in consumer service programs which make a definite contribution to the over-all education program in the Chicago-Cook County area. While the home economics departments of these associations and firms conduct programs which are national in scope, agencies and organizations in the Chicago-Cook County area take advantage of the services and educational materials for use in their own programs. The trade associations are concerned primarily with providing the professional worker with scientific information. The food firms' programs are directed toward the consumer.

SUMMARY OF NUTRITIONAL ACTIVITIES IN CHICAGO Of the four official agencies in Chicago which include some nutritional activities in their over-all programs, only the Chicago Department of Welfare has an organized nutrition service, staffed by five home economists. The Municipal Tuberculosis Sanitarium employs two dietitians for a specialized service to a limited number of patients. The nutrition services provided by the Chicago Health Department are inci-

dental to other services, except in the Municipal Contagious Disease Hospital and the Chicago Intensive Treatment Center. Dietitians are in complete charge of the food service in these institutions, but have developed no educational program in nutrition for patients. In the schools under the Board of Education of Chicago nutritional activities are limited to some food and nutrition instruction given in connection with health, home mechanics, and home economics classes, a feeding program for under-par children, and a school lunch program. The Bureau of Physical and Health Education, which is responsible for the health courses given in the schools, employs neither a home economist nor a nutritionist, nor does it obtain consultation service from the Division of Household Arts.

Among the 15 voluntary agencies reporting some nutritional activities, only 7 maintained organized nutrition services. They employ a total of 17 full-time and 5 part-time nutritionists and home economists. The remaining eight agencies include nutrition as part of some other service, depending upon the assistance and co-operation of other agencies in the development of this phase of their programs. None of the eight employ either nutritionists or home economists.

Unwise management of money and faulty food habits are the cause of many social and economic problems. Practical assistance in this field should be an organized service in every welfare agency. Nutritionists and home economists are needed both to give consultation service to the case workers in their guidance of clients and to provide definite staff education on nutrition.

It is difficult to determine how many persons are reached by the nutritional activities of the official and voluntary agencies. It would be fair to assume that the programs of the official agencies reach a very small percentage of the general population, since they are planned for select groups, such as pregnant women, nursing mothers, infants, school children in the sixth to twelfth grades, and persons receiving public assistance. With the exception of the Chicago Department of Welfare, the official agencies have not assumed their full responsibility in this phase of public health.

NUTRITIONAL ACTIVITIES IN COOK COUNTY (EXCLUSIVE OF CHICAGO)

A representative of the Chicago-Cook County Health Survey interviewed the appropriate personnel in all agencies and organizations outside Chicago which include some nutritional activity or food service as a part of their over-all programs. Some nutrition activity

or food service was a part of the over-all program of three health departments, the Cook County Bureau of Public Welfare, the Cook County Home Bureau, in co-operation with the Home Economics Extension Service of the University of Illinois, and sixty-two school districts. Only the Cook County Department of Public Health and the Cook County Bureau of Public Welfare have organized nutrition programs. The only voluntary agencies with full-time nutritionists on their staffs which operate in Cook County outside Chicago are the Chicago agencies which extend their services into the county.

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH Since February, 1942, the Cook County Department of Public Health has had a full-time nutritionist on the staff working under the direct supervision of the director. Her services are available in rural and suburban Cook County, with the exception of Evanston, Winnetka, and Kenilworth.

The nutritionist's services are divided as follows: (1) consultation service with staff members, (2) direct service to 10 of the 45 maternal and child health conferences conducted by the health department and to 9 yearly crippled children's clinics sponsored by the Division of Services for Crippled Children of the University of Illinois, (3) service in connection with the school health examination program one day each week, (4) training programs for students attending universities and hospitals affiliated with the health department, (5) lectures, demonstrations, and preparation of educational materials for community programs, (6) consultation service during the summer to several camps (work camps and Boy Scouts) in Cook County, and (7) consultation service to teachers on nutrition education and to school lunch managers on organization of school lunch programs, menu planning, and food preparation.

The nutritionist works in close relationship with the Illinois State Department of Public Health and attends the nutrition staff meetings of that department every two months. She is also to work closely with the nutritionist newly appointed to the staff of the Tuberculosis Institute of Chicago and Cook County in planning an over-all nutrition program for rural and suburban Cook County. In addition to the work of the nutritionist, the public health nurses give some nutrition instruction during their home visits to the majority of the families.

The over-all public health nutrition program developed in the Cook County Department of Public Health is too heavy for one

person. Until the staff can be increased, the nutritionist should center her activities on staff education and limit her direct service to the maternal and child health conferences.

EVANSTON DEPARTMENT OF HEALTH There is no nutritionist on the staff of this health department, although a health education specialist includes some nutrition education work in her activities. All prenatal, infant, and child welfare cases are referred to the outpatient department of the Evanston Hospital, although no nutritionist serves on the staff of the prenatal, infant, and children's clinics there.

THE WINNETKA AND KENILWORTH HEALTH DEPARTMENTS A nutritionist is not employed. The pediatrician in the well-baby clinics provides the mothers with diet information. The nurses distribute some nutrition leaflets.

The diet instruction provided in the well-baby clinic is considered adequate, though some provision should be made with the Cook County Department of Public Health or with a voluntary agency for a nutritionist to give consultation and staff education service to the health department nurses.

THE COOK COUNTY BUREAU OF PUBLIC WELFARE A home economist is not employed, but plans have been made to set up a home economic unit on October 1, 1946. At present home economists from the staff of the Illinois Public Aid Commission are available to the county office for consultation service.

SCHOOL DISTRICTS IN COOK COUNTY There are 193 school districts in Cook County with independent school boards. Of this number, 62 districts, or 112 schools, are participating in the Federal School Lunch Program. According to the record of the Cook County School Board, these 112 schools reached 26,506 pupils, or 40 percent of the total elementary school membership, with Type "B" and Type "C" (milk only) lunch programs; and 9,527 pupils, or 29 percent of the total high school population, with a Type "A" lunch program.

The results of a questionnaire on nutrition education in the county schools, sent to the 193 school districts by a subcommittee of the Chicago Nutrition Association, pointed to a recognized need for such service. Approximately 99 percent of the 178 questionnaires returned requested suggestions for ways in which to co-ordinate the practical teaching of serving a good lunch with further nutrition teaching in other classes, or as a separate program.

COOK COUNTY HOME BUREAU This bureau was organized early

in 1944. A home advisor and an assistant serve all Cook County outside metropolitan Chicago. The bureau conducts an educational program through 825 home bureau members organized into thirty home economics clubs, 500 girls representing thirty-four 4H Clubs, and many other organized community groups. The food and nutrition part of the educational program consists mainly of nutrition lectures, food preservation, food preparation demonstrations, and monthly bulletins on meal planning, menus, and recipes. The home economics and 4H clubs have reached more than 1,300 persons belonging to a group not likely to be reached by other official agencies.

VOLUNTARY AGENCIES No voluntary agency in Cook County (exclusive of Chicago) employs a full-time nutritionist to conduct a nutrition education program. The following voluntary agencies, with headquarters in Chicago do, however, extend their services into the county and reach groups not served by the public agencies: the Chicago Nutrition Association, which has worked with the county schools; the Elizabeth McCormick Memorial Fund, which has worked with nursery schools and child-caring institutions; the American Red Cross, which has worked with schools and women's groups; and the Tuberculosis Institute of Chicago and Cook County, which has worked with the county schools through institute nurses located in the county. These services have met a real need in the county.

EVANSTON HOSPITAL OUTPATIENT DEPARTMENT NUTRITION SERVICE One of the hospital dietitians gives one morning each week to the diabetic clinic in the outpatient department and one afternoon to the general nutrition clinic, which provides high-caloric, reduction, and ulcer management diets. A total of eighty patients was seen in these two clinics from January to July, 1946.

BUSINESS FIRMS AND PUBLIC UTILITIES The nutrition education activities and services conducted by trade associations, food organizations, and dairies in Chicago are available also to residents of the area of Cook County outside Chicago. The Public Service Company of Northern Illinois has a home service department which conducts a consumer service program in thirty-five communities. During 1945-46 ten home economists were employed to assist homemakers with the use of electrical equipment and appliances and to conduct classes and demonstrations on food preparation. The North Shore Gas Company has no home economist at the present time.

PROPORTION OF POPULATION REACHED BY NUTRITION PROGRAMS IN COOK COUNTY It is difficult to determine how many people re-

ceive the benefit of the nutrition services available from the official agencies located in Cook County and the four voluntary Chicago agencies which extend their services to the county area outside Chicago. With the exception of the Elizabeth McCormick Memorial Fund, the organized nutrition programs of both official and voluntary agencies are fairly new, established since early 1942, and their staffs are small. Activities seem to center around a limited group of clinic patients, children of school age, and homemakers. Probably only a small proportion of the total population of Cook County outside Chicago is reached by nutritional services of any type.

RECOMMENDATIONS FOR CHICAGO

It is recommended that:

1. The Chicago Health Department shall establish within the Bureau of Preventive Medicine a Nutrition Division, headed by a public health physician with specialized training in nutrition and staffed by nutritionists who meet the educational qualifications established by the Committee on Professional Education of the American Public Health Association. Such other assistance should be provided as will be needed to assess the nutritional status of the population in Chicago and to develop a practical program to correct and improve the health status of the people in Chicago. These programs should be developed in co-operation with other agencies and universities qualified and interested in undertaking nutritional studies and in conducting community programs.

2. Nutrition services shall be established within the health department, not as a separate clinic, but as a part of the prenatal and pediatric clinics.

3. General hospitals and similar institutions caring for the sick shall be encouraged to establish dietary departments which might aid in a nutritional education program for patients.

4. The Board of Education shall develop a unified program for the improvement of the nutrition of pupils through an educational program offered to the entire school membership; a nutrition education specialist shall be employed to integrate this educational program into the established curriculum; consideration shall be given to making a course in food and nutrition a required course for all high school students.

5. The supervisory staff of the Bureau of School Lunches shall be

qualified not only in institutional food service but also in teaching methods so that the lunch program may serve as a laboratory for teaching nutrition education and may become an integral part of the school program for the improvement of the nutrition of pupils.

6. The Municipal Tuberculosis Sanitarium shall place trained dietitians in charge of the entire food service; the dietary department shall offer nutrition classes and provide educational materials for as many of the institutional patients as possible; furthermore, the Department of Dispensaries of the Municipal Tuberculosis Sanitarium employ an adequate number of nutritionists for therapeutic and normal diet instruction to clinic patients.

7. The Catholic Charities and School Board of the Archdiocese of Chicago shall be encouraged to employ home economists to (1) assist their case workers with the food management and the dietary problems of families receiving assistance, (2) shall act as a food service advisor to managers of all parochial school lunch programs, child care institutions, day nurseries, and homes for the aged supported by the Catholic Charities, and (3) shall assist the staffs of all parochial schools in the development of a nutrition education program.

8. The Family Welfare Department of the Salvation Army and the Family Service Bureau of the United Charities shall be encouraged to add home economists to their staffs, and the Visiting Nurses Association of Chicago shall be encouraged to employ a nutritionist so that the agencies may strengthen their services on dietary and food management to families.

9. Other agencies now carrying on activities in various phases of nutrition shall consider further amplification and extension of their services in the field.

RECOMMENDATIONS FOR COOK COUNTY (EXCLUSIVE OF CHICAGO)

It is recommended that:

1. The Cook County Department of Public Health shall enlarge its nutrition staff according to the proposed reorganization plan (see Chapter 42) in order to provide nutrition services in all clinics and school health programs. In addition, that the department shall look forward to the appointment of a public health physician with special training in nutrition and such other assistance as would be needed to assess the nutritional status of the population groups within its jurisdiction. This investigation into the nutritional status

of the population should be developed in co-operation with other agencies and universities qualified and interested in undertaking nutritional studies and in conducting community programs.

2. The Evanston Health Department shall establish a nutrition service co-ordinated with the department and with the nutritional activities of the other health, welfare, and educational agencies in Evanston.

3. The Winnetka and Kenilworth Health Departments shall make some provision for consultation service in nutrition for the public health nurses.

4. The Evanston Hospital Association shall be encouraged to appoint a full-time clinic nutritionist to the outpatient department. In addition to the diabetic and general nutrition clinic, she should serve the prenatal, infant, and child welfare clinics, as well as cases referred from other medical clinics.

5. The Office of the County Superintendent of Schools shall encourage the Illinois State Department of Instruction to provide the county schools with professional assistance in organizing and operating school lunch programs, together with guidance and teaching aids for integrating nutrition education into the established curriculum.

HEALTH EDUCATION

by *Ruth Mumford Smith, R.N.*, and
Louisa J. Eskridge

THE IMPORTANT PART which health education should play in the development of programs in every field of public health has been emphasized again and again in the preceding chapters. It is an essential element in the control of the acute communicable diseases, tuberculosis, and the venereal diseases; in the success of maternal, infant, and child health services; and in individual and public understanding of the objectives of programs of public health nursing, industrial hygiene, dental health, and nutrition.

The discussion of communicable disease control in earlier chapters pointed out the marked reduction in the incidence of many of the communicable diseases which resulted from the provision of safe water, proper sewage disposal, and adequate programs for vaccination and immunization, and the elimination of the serious epidemics which occurred periodically during Chicago's early days. The Chicago Health Department and the health departments of several suburban communities in Cook County were among the first to make use of channels of public information to attack those diseases which can be controlled effectively only by broadening the understanding of professional groups and by stimulating public and individual action. During this period, many voluntary organizations interested in public health and welfare were established and worked side by side with the official agencies as pioneers in the field of health education.

The infant death rate was one of the first problems to be attacked by the concerted efforts of these agencies (official and voluntary). The comprehensive program of health education of the public, particularly of expectant or potential mothers, which these agencies have conducted during the last two decades, has contributed in no small degree to the steady reduction in the number of infant deaths in the Chicago-Cook County area. Another example is the pooling of efforts and resources by official and voluntary agencies in conducting

a continuous campaign against diphtheria which has, over a period of years, so greatly reduced the destructive force of this disease.

Since health education cuts across many programs and is a part of many other activities, the following plan was used to evaluate current health education activities in Chicago and Cook County. Definite key questions were formulated, the answers to which would provide some knowledge of the work in progress and aid in exploring programs of a number of agencies with some degree of consistency. The facts in this report were gathered through observation trips, questionnaires, interviews, group conferences, and data from annual reports.

Health education activities in health departments were studied thoroughly. Certain public and parochial schools were sampled, and specific information on health education in the schools was obtained through interviews with the administrators of thirteen Chicago and Cook County public and parochial school districts. The activities of teachers were sampled through interviews with twelve teachers. While the survey was concerned chiefly with the health education work of the official agencies, it was recognized that many voluntary agencies do intensive health educational work in their respective fields and that co-ordination between official and voluntary agencies is vital to a balanced health education program. Ten voluntary agencies were visited. Clinics also were visited, and the activities of the Museum of Science and Industry were studied. Information was secured about health education programs in hospitals and in industrial plants. The important part played by physicians, nurses, and other professional workers in their daily contacts with patients, although difficult to evaluate, cannot be overestimated and plays a significant part in the over-all health education programs in Chicago and Cook County, as in other communities.

HEALTH EDUCATION ACTIVITIES IN HEALTH DEPARTMENTS

Health education as a planned and systematized program is practically nonexistent in the health departments of the Chicago-Cook County area. Consequently, little can be said about present accomplishments. The emphasis must be laid on what should be done.

CHICAGO HEALTH DEPARTMENT The Chicago Health Department operates neither an office nor a division of health education. There are no health educators on the staff who meet the qualifications recommended by the Committee on Professional Education of

the American Public Health Association.¹ There has been excellent specific educational work of a campaign nature by the Venereal Disease Control Program, and the campaign against infant deaths is known nationally. Aside from these activities and the educational approach of individual public health nurses and of some other staff members, no organized health education service exists. It is impossible to conduct a comprehensive program of community health education, covering all aspects of public health, without an office or division of health education, staffed by trained personnel and administered by a qualified director. At the time of the survey, the health department budget included no appropriation for health education.

HEALTH DEPARTMENTS IN COOK COUNTY (EXCLUSIVE OF CHICAGO) The health departments of Evanston and Oak Park employ qualified health educators and have adequate facilities. The Cook County Department of Public Health also employs a qualified health educator, but the funds available for the needed educational program fall far short of the recommended minimum of not less than four to six and one-half percent of the total health budget. The single health educator on the staff of the Cook County Department of Public Health is faced with an almost insurmountable task in view of the population of 535,130 which must be served in Cook County, exclusive of Chicago, Evanston, and Oak Park.

A recently published authoritative study of local health services indicates that the official agencies in the Chicago-Cook County area should employ a minimum of ten trained health educators.² This number is needed by the health departments alone and is exclusive of those qualified health education personnel who may be employed by voluntary health agencies, industries, and schools.

APPROPRIATE HEALTH EDUCATION FUNCTIONS FOR HEALTH DEPARTMENTS

The following functions lie well within the scope of a program of health education that could be carried on under the guidance of trained health education personnel operating as a bureau division within the general administrative framework of a health department, with full collaboration of other health personnel and in co-operation with other civic groups.

¹ American Public Health Association, Committee on Professional Education, *Educational Qualifications of Health Educators*, New York, 1943.

² Haven Emerson, *Local Health Units for the Nation*, New York, *The Commonwealth Fund*, 1945.

The planning, organization, and administration of a co-ordinated program of health education in co-operation with other community agencies.—The division of health education in the health department should act as a service unit not only for other community agencies but also for the other divisions within the health department. Development of closer co-operative relationships among all community agencies interested in health education should be concomitant with the service programs.

An information service to provide answers to inquiries, supply source materials and references on request, and maintain channels for press releases, radio broadcasts, and special publicity programs.—Additional service should be provided through organization of speakers' bureaus, conferences, meetings, and organization of inservice training courses for staff members to meet special requests from professional groups.

The production, selection, assembly, and distribution of health education materials.—The services of special technicians and health education experts should be utilized to the extent necessary to provide this service.

A clearing house for the distribution of pamphlets, posters, films, and exhibits available from national and community agencies.—The health education division should assist in the selection of materials suitable for use in the area and provide service to other branches of the official agency by bringing to their attention the most recent educational materials in health and related fields.

The interpretation of vital statistics to the general and professional public.—Those charged with responsibility for health education should work jointly with the vital statisticians in preparing popular news releases on the trends in disease prevention and control and educational exhibits showing health services and their effect upon the disease and death rates by interpreting cold facts as "the bookkeeping of humanity."

Preparation of interpretive material regarding service to the public and joint planning with health education personnel in the schools.—Collaboration of health and educational groups in the development of written policies for use by the field divisions of the health department is desirable. This procedure would help to coordinate efforts, delineate responsibility and authority, and effect smoother working relationships. It would assure the educational interpretation of professional health services, the organization of health

instruction in the curriculum, and the enrichment of educational experience in personal and public health and bring about improvements in the health education program for school children.

Appraisal of the health education program and review of progress.—Changing programs and newer educational techniques in adult education make such evaluation essential in the development of a flexible program capable of meeting the increased demands for service from other divisions of the health department and from the public.

SCHOOL HEALTH EDUCATION SERVICES

In Chicago the administration of the school health education program lies within the jurisdiction of the director of health and physical education. Nine district supervisors work under his direction, all of whom have majored in physical education and have interest and ability in that field. Specific data about additional professional qualifications of the supervisors could not be obtained, but the director indicated that no special training in health education was required.

The majority of the other school districts sampled also reported that health instruction was under the department of physical education. The demands of the physical education programs require virtually the full time of the staff of the department and thus jeopardize the quality of health instruction, which is likely to be given only minor attention.

ADMINISTRATIVE PRACTICE IN RELATION TO SCHOOL HEALTH POLICIES The questions used in interviewing the administrators of 13 public and parochial school districts and the sampling of 12 teachers were designed not only to secure specific information on health education practices in the schools of the Chicago-Cook County area but also to determine the extent to which teachers and administrators were aware of health education tools and resources and, consequently, to what extent they were able to make the child's everyday school experiences an educational process.

The information obtained in the interviews with administrators is summarized here: (1) An annual health examination for teachers, including chest X-rays, was required by only 3 of the 13 school districts sampled. (2) Eight of the 13 school districts require health examinations for pupils at least every four years, as specified by Illinois law. Most of the county schools make this requirement, and as a result county teachers appeared to be much more aware of the

health problems of the children, including the amount of medical attention received. Teachers and nurses co-operated well in health education activities. (3) Participation by the health department in any phase of the school health program except communicable disease control was reported for only 2 of the 13 school districts. Since the basis for health appraisal counseling and a large part of health instruction is the health record card, the health examination is a vital part of the school health program. This activity is most inadequate in Chicago and in some of the county school districts. In some districts, a very real effort is being made to get parents to make use of their family physicians. (4) Courses for teachers in health education or child growth and development is required in only 5 of the 13 districts, and inservice training of this type in only 3. (5) Ten of the 13 school systems had integrated health instruction throughout the curriculum in the first six grades. Above the sixth grade, health instruction is largely incidental. While incidental teaching is of great value, dependence upon unorganized teaching without co-existent discussion of policies and objectives is likely to lead to instruction of little value in the total program of general education. The whole program suffers because of the lack of qualified instructors in health education. (6) Six school systems combined health instruction with physical education in the high schools. (7) A health curriculum committee to co-ordinate health instruction with physical education was reported for only three school districts. (8) Only three districts reported a planning group for health education in the high schools. (9) Only two of the thirteen school districts had developed school health councils for joint planning.

HEALTH EDUCATION ACTIVITIES BY SCHOOL TEACHERS The twelve teachers interviewed in order to secure information in regard to teacher understanding of school health programs were located in schools in Evanston, Skokie, La Grange, Chicago Heights, and Oak Park. Interview questions were devised similar to those used with the administrators.

Nine of the eleven questions reported in Table 115 deal with the health service aspects of the school health program. Considerable improvement apparently needs to be made in this phase of inservice education in order to secure the understanding and participation of more teachers. When the teacher was asked if she could name pupils referred to the nurse because of sore throat, often the reply was, "The nurse takes care of that." When asked if she had a printed list of

TABLE 115. DATA FROM TWELVE TEACHER INTERVIEWS IN COOK COUNTY

| | LOCATION AND TYPE OF SCHOOL | | | | | | | | | | | | |
|--|-----------------------------|----|-----------|--------|--------|--------|-----------|--------|-----------------|--------|----------|-----|-----|
| | TOTAL | | EVANSTON | | SKOKIE | | LA GRANGE | | CHICAGO HEIGHTS | | OAK PARK | | |
| | | | Parochial | Public | Public | Public | Public | Public | Parochial | Public | | | |
| 1. Teacher has health record cards in room | Yes | No | | | | | | | | | | | |
| 2. Did nurse discuss motivation for habits of cleanliness? | 3 | 9 | No | No | No | Yes | Yes | No | No | Yes | No | No | No |
| 3. Did nurse discuss what to do in an epidemic? | 6 | 6 | No | No | No | No | Yes | No | Yes | Yes | Yes | Yes | Yes |
| 4. One or more pupils excluded from class by teacher because of sore throat | 5 | 7 | Yes | No | No | Yes | Yes | No | No | Yes | No | Yes | Yes |
| 5. A pupil referred to nurse because of absence | 5 | 7 | No | No | Yes | No | Yes | No | No | Yes | No | Yes | Yes |
| 6. A pupil referred to nurse for defective vision in the last five months | 9 | 3 | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | No | Yes | Yes |
| 7. Teacher has a printed list of signs and symptoms and knows where it came from | 7 | 5 | Yes | Yes | Yes | No | Yes | Yes | No | Yes | No | No | No |
| 8. Teacher weighed pupils before health examination | 5 | 7 | No | No | No | Yes | Yes | No | No | Yes | No | Yes | Yes |
| 9. Teacher recorded results of health examination or is familiar with them | 3 | 9 | No | No | No | No | Yes | Yes | No | Yes | No | No | No |
| 10. Teacher has access to clinical thermometer and knows where it is | 3 | 9 | No | No | No | No | Yes | No | No | Yes | No | No | No |
| 11. Teacher had training in health education or child development during last five years | 7 | 5 | No | Yes | Yes | Yes | Yes | Yes | No | Yes | No | No | No |
| | 2 | 10 | No | No | No | No | Yes | No | No | No | No | No | No |

signs and symptoms of the communicable diseases, too often the answer was, "No, the nurse does the inspections and eye tests."

Since most of the teachers interviewed did not see the health record cards of their pupils, it is evident that they are not informed about the findings after examinations are made. In the Chicago schools, even when cumulative records are kept in teachers' rooms, the health status of the children is not well known to the teachers, since few physical examinations are given.

The questions relating to medical and nursing service were designed to determine teacher knowledge and awareness of the nature and place of those services, hence the educational opportunities which exist. There is a close relationship between the teacher's awareness of professional health services and the quality of the health instruction which she develops in the classroom. There is a similar close relationship between the teacher's knowledge of the findings of the physical examination and her own professional service in educational guidance and counseling of the children in her charge. The physical condition of the child has direct bearing upon his school behavior.

Teachers who observe children day by day are in key positions to communicate changes in a child's physical condition to the proper authorities. The informed teacher will be more alert regarding these changes and can report more promptly to the nurse and the physician. Hence, there is need for joint planning on school health policies, committee work on follow-up, and an organized program of inservice education and educational workshops, so that educational and health personnel may proceed toward the same objectives, each with full understanding of the other's contribution.

NEED FOR CO-ORDINATION OF SCHOOL HEALTH EDUCATION ACTIVITIES Trained personnel are needed in departments of education and health who are capable of co-ordinating the entire school health program. Various effective patterns of co-ordination are possible. In the Federal health and education agencies, the health education personnel on the staffs of the United States Public Health Service and of the United States Office of Education serve interchangeably as consultants to each agency. In England the Chief Medical Officer of the Ministry of Health also serves in the same capacity for the Ministry of Education. The same co-ordination of school health service and school health education is possible in municipalities. There are notable demonstrations in the United States. The type of co-ordination

developed in Chicago and Cook County is dependent upon the local situation, administrative policies, and professional resources.

The 1946 revision of *Suggested School Health Policies* is an authoritative guide for those charged with the development of an adequate school health education program.³ The policies recommended include both educational functions and those health functions which have education implications for the instructional program.

HEALTH EDUCATION PROGRAMS IN THE VOLUNTARY AGENCIES

In the strongest community-wide health education programs, the working relationships between voluntary and official agencies are close. Activities are co-ordinated by means of joint planning on both short-range and long-range programs.

All activities of voluntary health agencies may have educational significance. Even the demonstrations which they conduct are interpretations of services which ultimately should be available to the public through the facilities of tax-supported agencies. Voluntary agencies frequently finance various phases of official agency programs only until they can be assumed by the official agency. Duplication of effort is thus avoided, and opportunity is provided to reinforce those activities which need strengthening and to eliminate gaps in service.

The Health Division of the Council of Social Agencies of Chicago is the only over-all health planning committee or council in the Chicago-Cook County area. The council's objectives in the health field are to extend co-operation, improve existing services, prevent duplication of effort, plan services for unmet needs, and increase understanding and support of both public and private health and welfare services. Some seventy-five voluntary and tax-supported agencies in the health field are participating members of the health division. Its health education committee in turn comprises some thirty agencies in which the primary interest is health education. This committee recently published a handbook of health education resources in the area, is planning a project for a co-ordinated health education program in industry, and is considering other ways of strengthening the health education program in Chicago.

Each agency undertakes health education of the public in connection with its particular interests. When strong independent programs are conducted without full consideration of other existing

³ National Committee on School Health Policies of the National Conference for Co-operation in Health Education.

programs, too often certain segments of the population are involved in the plans of many agencies, while at the same time large segments of the population are not reached.

HEALTH EDUCATION ACTIVITIES IN TEN AGENCIES An analysis of the program, objectives, and activities of the ten voluntary agencies was made to determine their relationship to the over-all health program. The functions of each of these agencies in relation to health education are as follows.

Chicago Heart Association.—Education of the public concerning the prevalence of heart disease and its prevention; promotion of research into the problems of heart disease, especially as it relates to public health and the gathering of statistics; co-ordination of all organizations in the community which deal in any way with the problems of diseases of the heart. This association contributes services to four cardiac classes in the schools.

Chicago Nutrition Association.—The work of this association was described in Chapter 38 (Nutrition Services). It conducts a diversified program of nutrition education and of co-operative effort with other agencies in the field in the interest of nutrition education.

Chicago Society for the Hard of Hearing.—In addition to a direct service program, the society plans for the needs of the hard of hearing and promotes adequate community service through legislative activity, public education, demonstrations, and in other ways.

The Elizabeth McCormick Memorial Fund.—The comprehensive and flexible program of research, service, and education in the fields of nutrition, child health, child welfare, and parent education was described in Chapter 38 (Nutrition Services) and has been referred to in other discussions.

The Illinois Social Hygiene League.—Public education in the fields of venereal disease prevention and the education of the community in all phases of social hygiene was discussed in Chapter 27.

Illinois Society for Mental Hygiene.—Education on mental health directed toward the public and for private groups. The activities of this society were discussed in Chapter 39 (Mental Hygiene).

Illinois State Medical Society.—This organization presents authentic health education to the public.

Tuberculosis Institute of Chicago and Cook County.—A diversified program of public health nursing, tuberculosis case-finding, and

health education, is maintained mainly for the areas in Cook County outside Chicago. This agency's activities were described in Chapter 26 (Tuberculosis) and in several other chapters.

Young Men's Christian Association.—The Y.M.C.A. has sponsored for many years a South Side Health Council, which carries on a health education program in relation to the health problems and needs of this area. Some planning is done with contributing agencies.

Young Women's Christian Associations.—The Y.W.C.A. provides a health education program available to all members which includes: (a) individual service on personal health problems; (b) health education programs for small and large groups; (c) activities which build health and develop skills in recreation that can be used throughout life.

ACTIVITIES IN RELATION TO NEED The executive of each health agency studied was asked to indicate on a community area map the approximate location of its major project during the last six months. Careful study of the master map prepared showed that activities are concentrated in certain areas and entirely absent in others. In only one instance was there evidence of intensive activity by more than two agencies in the same area. A great need exists in the local areas of the northwest, west central, and southwest sections of Chicago.

Study of the activities sponsored in different community areas indicated that the major efforts for health education among children were not always made in the areas where there was the greatest percentage of population between the ages of 5 to 19. There is need for the development of health education activities for both adolescents and adults in the Chicago-Cook County area. Health education for adults is needed which will affect conditions for younger as well as older children.

In the predominantly Negro section of the near South Side, the South Side Health Council, sponsored by the Y.M.C.A., has sought to bring together the people living in this region for joint consideration of their problems and joint planning for their solution. Recently fourteen agencies collaborated with members of the South Side Health Council in planning and conducting a specific health project for the area. This project was based upon the interests and the needs of the people living in the area and provided the nearest approach to a co-operatively planned and operated program of any reported by

the agencies sampled. Without doubt, the continuous interest and leadership of the person instrumental in organizing the South Side Health Council some twenty years ago has been a stabilizing factor.

Comments elicited through interviews indicated that little effort is made to reach the people who are not in schools, who do not attend church, who are not members of clubs having educational programs, and who, according to experts in social relationships, may be listed on the membership rolls of such organizations, but seldom attend and never participate. This group has the greatest need for educational service. In many instances the primary reliance is upon radio or public speakers. While these media play a part in spreading information, other media are known to be more effective in communicating ideas as well as facts and afford greater assurance to the agency that its program objectives may be attained. It was not possible to find out what percentage of their total budgets these agencies expended for health education.

Lack of understanding or knowledge of programs of other agencies is very evident. In certain instances agencies interviewed were not too confident that the activities they sponsored actually were contributing to their stated objectives. Trained health education leadership from the official agencies would contribute greatly to that close coordination which is so essential to a comprehensive plan for health education.

HEALTH EDUCATION IN HOSPITALS AND CLINICS

Hospitals and clinics have unusual opportunities to provide direct educational services to the great number of people who depend upon these resources for medical treatment. Many clinic patients have had only limited educational advantages. The time they spend in clinic waiting rooms can be utilized in increasing their knowledge if health education material is made available to them. Hospitals and clinics can thus function as centers for the communication of public health information. Every employee who comes in contact with patients has an opportunity to make his services educational.

Staff members should be given inservice training in current educational techniques and kept informed about new developments in health and preventive medicine. Inservice training for maintenance personnel and for food handlers is also an important aspect of the total health education program of any hospital. The prevention of cross-infections, preparation of food for special diets, and need for

superior housekeeping are problems requiring hospital workers who are informed on the health aspects of their jobs.

HEALTH EDUCATION ACTIVITIES IN FORTY-SIX HOSPITALS Information on health education activities was received from 46 of the 87 hospitals to which questionnaires were sent. The replies indicated that at least some of the hospitals already are aware of their potential opportunities for service in health education and are accepting responsibility for developing such a program.

Only 20 of the 46 hospitals reported some type of health education program; 18 of them were giving instruction on nutrition and infant care; 15 were giving attention to diabetes, 11 to prenatal care, and 10 to diseases of the heart. Only 5 of the 20 hospitals reported instruction on venereal diseases. One or 2 of the 20 reported health instruction with regard to surgery, orthopedics, cancer, contagious diseases, postnatal care, tuberculosis, and gynecology.

Leaflets, bulletins, and interviews were the media for health instruction used most frequently by the reporting hospitals. Group conferences were reported by 11, group demonstrations by 12, classes by 12, and interviews by 16. Charts were used by 14 of the 20 hospitals, posters by 13, and exhibits and films by 10.

In one of several clinics visited, 75 patients waited an average of 45 minutes. No printed material was available. Although this was a prenatal clinic, the only attempt at instruction was four commercial posters illustrating by means of "shares" what constitutes poor and good breakfasts and dinners for children between 16 and 20. These posters were so hung that they were not within the patients' view. Their message did not meet the health education needs of prenatal patients. From a health education point of view, the patients' 45-minute wait was wasted.

Health education activities should be co-ordinated not only within hospitals and clinics but also between these institutions and the health department. Closer working relationships would result in more effective community health education programs.

HEALTH EDUCATION IN INDUSTRY

Health education in industry, as elsewhere, evolves most effectively through joint planning by representatives of all those having a stake in production—labor, management, and professional health workers. Understanding of health and safety regulations and practices achieved through joint planning has contributed to production, reduction

of time lost through illness, and increased security on the part of the worker. These results were attained in a sample of different industries in several sections of the United States in which demonstrations were made of industrial hygiene programs, including health education.

Medical services in industry not only determine a worker's fitness to perform his tasks but also afford educational opportunities through guidance in matters of general health. Nursing services afford an opportunity for a broader and more comprehensive educational service in planning with workers' groups and through participation in joint health committees and councils.

Statistics obtained in connection with the general survey of industrial activities in the Chicago-Cook County area (see Chapters 32 and 33) indicate that health education services were available to 45.1 percent of the 594,455 workers in the 1,399 plants surveyed. Services were provided at the plant in almost all cases (at plant to 44.7 workers, elsewhere to 0.4 percent). Most of the health education activities were reported by the plants with more than 100 employees, 47.4 percent of the employees in this group of plants as compared to only 2.8 percent of the employees in plants with 100 employees or fewer.

Table 116 shows the types of industries included in the survey, the number of workers employed in plants of each type, and the percent to whom health education services were available at the plant.

Among twenty-four large plants with full-time medical departments, to which personal visits were made by members of the industrial hygiene survey staff, only ten had any type of organized health education for employees. One reported the existence of a workers' committee on health, but its activities were said to be limited.

Although the medical personnel and facilities in some of these twenty-four plants are more or less adequate, it is clear from consideration of comparative figures on health education activities that these facilities are not used to the fullest extent possible, nor are medical, nursing, and other personnel utilizing health education sufficiently as an aid in extending their professional services.

The "health education in industry project" planned by the Council of Social Agencies should be most valuable. It will provide a means for expanding and linking together the health education activities within industry with those throughout the community of Greater Chicago.

TABLE 116. TYPE OF INDUSTRY BY TOTAL NUMBER OF WORKERS EMPLOYED AND PERCENT TO WHOM HEALTH EDUCATION AT PLANT WAS AVAILABLE

| <i>Type of Industry</i> | <i>Number of Workers</i> | <i>Percent of Workers to Whom Health Education at Plant Is Available</i> |
|------------------------------|----------------------------------|--|
| Extraction of minerals | 613 | ... |
| Manufacturing and mechanical | | |
| Chemical and allied | 23,160 | 46.0 |
| Clay, glass, and stone | 2,813 | 34.2 |
| Clothing | 9,993 | 19.8 |
| Food and allied | 43,806 | 19.3 |
| Iron and steel | 253,190 | 48.6 |
| Nonferrous metal industries | 12,616 | 38.0 |
| Leather | 7,470 | 28.1 |
| Lumber and furniture | 7,418 | 14.5 |
| Paper and printing | 38,730 | 32.7 |
| Textiles | 2,916 | 72.6 |
| Miscellaneous manufacturing | 18,092 | 31.2 |
| Personal service | 11,260 | ... |
| Trade | 46,343 | 62.9 |
| Transportation | 65,016 | 32.3 |
| Public utilities | 51,019 | 82.2 |
| All industries | 594,455 | 44.7 |

RECOMMENDATIONS

It is recommended that:

THE OFFICIAL AGENCIES 1. A strong division of health education shall be created in the official health agencies, each under the direction of a competent health educator with qualifications not less than those recommended by the Committee on Professional Education of the American Public Health Association.

2. The directors of these divisions shall be given full responsibility, subject to the approval of their respective supervisors, in planning for a co-ordinated program, with adequate staff and facilities to carry on the accepted functions in health education within their own jurisdictions.

3. Upon the establishment of qualified directors of health education divisions in the official agencies, the Health Education Committee of the Council of Social Agencies of Chicago shall be expanded and strengthened to evaluate continuously the health education needs of the Chicago-Cook County area. (a) Its membership shall jointly make recommendations for (1) an over-all health education program for the area, (2) the contribution each agency will make to the total program, and (3) the agencies to assume major responsibility for the different phases of the program in specified

areas. (b) One or more small community areas in the city and the county shall be selected in which to demonstrate what can be accomplished by an intensive community program based upon individual and group health needs and by its use as a proving ground for inter-agency planning and program development. (c) A trained health educator shall be placed in each selected demonstration area to assist in the development of the health education program.

4. Because of the shortage of qualified health educators, consideration shall be given to the recruitment of persons in Illinois who can meet professional requirements for graduate training in public health education.

5. Persons who have had graduate study concerning growth and development of children and health education, with particular preparation in the area of school health, shall be added to the staffs of the departments of education, with the responsibility for developing and carrying out in the schools a sound health program in co-operation with the qualified workers in other agencies and for providing inservice training for teachers.

6. Specially trained personnel shall be added to the staffs of teacher training institutions in Chicago and Cook County, these instructors to be responsible for training and co-ordinating those activities of the institutions which will provide functional preservice health education for all teachers.

7. Suitable local or state-wide committees, such as the Joint Committee for Student Health and Health Education in Teacher Training Institutions, shall study the need for additional legislation relating to the entire field of school health education and shall sponsor the legislation.

THE VOLUNTARY AGENCIES 8. The voluntary agencies shall recognize their particular functions in developing programs of study, research, and demonstration in special fields of health education.

9. Those agencies engaging in wide-spread community education activities pertaining to health, in which program purposes and budgets would warrant such an item, shall consider fully the desirability of adding qualified health education personnel to their staffs.

10. The voluntary agencies shall participate actively as members of the central planning committee or subcommittee discussed in recommendation No. 3.

11. They shall give full consideration to assumption of financial

support and other participation in one or more of the suggested demonstration areas.

12. They shall make provision for the establishment of fellowship funds for the training of health educators who can fill the needs for trained personnel over a period of years.

13. They shall select and support, under joint planning with official agencies, particular demonstrations, such as health education in hospitals and clinics.

14. They shall plan jointly with the official agencies for the development of a production unit to prepare the tools of health education, such as exhibits, posters, pamphlets, and film strips. They shall pool their resources so as to produce tools for all agencies far below the cost to agencies when maintaining separate materials and employing separate personnel.

THE HOSPITALS AND CLINICS 15. Hospitals providing a training program for professional personnel and those carrying a heavy outpatient load shall consider seriously including a program of health education under qualified personnel; the program should be an integral part of the community health education program.

16. Health education by qualified personnel shall be an integral part of professional training in schools of medicine and nursing.

17. Hospitals shall consider assuming responsibility for health education in the neighborhood or the community.

18. Outpatient clinics shall provide pertinent material on health education for patients in waiting rooms.

INDUSTRY 19. The industries providing medical and nursing services shall inaugurate comprehensive, continuing health education programs under the direction of qualified health educators by joint planning between employers and employees.

20. The "health education in industry project" proposed by the Council of Social Agencies of Chicago shall be undertaken as soon as possible, with special emphasis upon small plants.

PERSONNEL POLICIES AND PRACTICES

by *Donald F. Simpson*

IF, AFTER HAVING LAID OUT AN ADEQUATE PLAN of organization for each of the official health agencies, it were possible to have all positions filled by competent personnel endowed with responsibility and authority to carry out a modern health program, there would be little use for the present survey. Such personnel so endowed would be able to solve all the problems. It is beyond all argument, therefore, that personnel selection and personnel policies are the most critical of all factors in a public health program. These factors are at the same time the most delicate to discuss because of the difficulty of keeping personnel discussions on an impersonal basis and the danger of drifting into personalities.

There was a time when the job of health officer was reserved for the superannuated doctor or one who for other reasons could not make a living at anything else. That era has passed, but unfortunately the minds of some twentieth-century leaders are still rooted in that era. Public health work worthy of the name is a career service for doctors, nurses, engineers, dentists, technicians, educators, and others whose services are essential for implementing modern health machinery. Being a career service, it calls upon all who enter it to present special technical qualifications for specific duties, and come prepared to devote to the chosen job the full span of active life.

In recruiting and holding competent personnel there are certain simple secrets. Next to an adequate wage commensurate with one's skills and experience, the most important item is a secure tenure of office for those who have proved themselves worthy. In not a few instances this consideration outweighs even the matter of compensation. The bane of every honest health worker's existence are the vicissitudes of politics. There can be no stability or continuity of health work when the health worker must keep one eye on politics and the other on his job. Even the best of them will either crack up or fold up under such circumstances. This, of course, is precisely

what the politician wants—men who come to recognize the futility of opposing his will. In the last analysis, therefore, a health program which is inert is not necessarily the fault of any individual, but rather of the system against which that individual must contend. In numerous instances during this survey, men in high places have recognized freely the shortcomings of existing policies and practices, but at the same time have confessed their utter helplessness to effect necessary reforms.

Civil service has been hailed as the most effective bulwark against some of the personnel difficulties. Theoretically, it should be the solution of some major problems. In the discussion which follows, however, the grounds for distrust of the civil service program as operated in this vicinity are demonstrated clearly.

In some instances information regarding personnel qualifications and duties was refused. In tax-supported organizations in which there is hesitation or refusal to make records available for fact-finding study, some ulterior motive which will not bear the light of public view must be assumed. Ordinarily, it is not difficult to sense misinformation, but the survey did not propose to act as a spying or detective agency. Except in those glaring instances in which two and two did not add up to four, information received was accepted at face value.

CIVIL SERVICE LAWS

A civil service system of personnel administration is required by state law of all public agencies and institutions providing health and medical care services in the Chicago-Cook County area. The Chicago Civil Service Commission and the Evanston Civil Service Commission were organized pursuant to the law of March 20, 1895.¹ The Cook County Civil Service Commission was established by the law of July 1, 1895.² The Civil Service Board of the Sanitary District of Chicago was organized after an amendment of July 1, 1935, to the law creating sanitary districts.³ The purpose of these laws and of the civil service organizations created in accordance with them is to provide a system of personnel administration based on the principle of merit.

¹ An Act to Regulate the Civil Service of Cities, Approved and in Force March 20, 1895, and as Amended to June 26, 1941.

² An Act Relating to the Civil Service Commission of the County of Cook, Approved and in Force July 1, 1895, and as Amended to July 21, 1941.

³ An Act to Amend an Act to Create Sanitary Districts, Approved June 28, 1935, and in Force July 1, 1935.

STATUS OF PERSONNEL IN HEALTH AGENCIES AND MEDICAL CARE INSTITUTIONS Public health and medical care programs are more dependent on the services of trained and efficient employees than is almost any other type of government activity. This situation is due to the highly specialized and technical nature of public health work and also to the fact that a very large proportion of the public funds allocated for health work is expended in payment of salaries and wages. A well-constructed and efficiently administered merit system of personnel administration will provide and retain a corps of qualified and competent health workers.

The percentages of the budgeted positions occupied by permanent civil service employees, filled by temporary appointees, and currently vacant provide a good index to the effectiveness of any civil service administration. At the time of the survey only 40.76 percent of the positions in ten tax-supported health agencies and medical care institutions were occupied by employees who had qualified for their jobs by successfully passing civil service examinations. Nearly half the health and medical care positions were filled by temporary appointees whose fitness had not been tested. Relatively few positions, 9.49 percent, were vacant.

The low percentage of permanent civil service employees is due largely to the suspension of all civil service examinations for the duration of the war emergency and for six months thereafter. The examinations were suspended to protect the right of men and women in the armed services to compete for permanent civil service jobs. As a result, all new positions and all vacancies in existing positions had to be filled by temporary appointment, because the only way in which civil service status may be gained is by passing an examination. Civil service employees desiring promotions were forced to accept temporary appointments to the more responsible positions, because the only way in which a permanent civil service employee in a lower position may gain permanent status in a higher position is by passing a promotional examination.

Some of the temporary appointees now in more responsible positions once held permanent civil service status in subordinate positions. Nevertheless, no temporary appointee has been tested by the civil service agencies as to his fitness for the position he now fills. It should also be pointed out that approximately 20 percent of all temporary appointees to public health and medical care positions

were granted temporary appointments before civil service examinations were suspended. Some health and medical care workers in Chicago and Cook County have held temporary appointments for as long as twenty to twenty-five years.

CIVIL SERVICE PROCEDURES

The procedures established in the laws and rules of each civil service agency provide for the merit principle in all phases of personnel administration. These procedures are intended to ensure the selection of public employees who not only meet all the requirements for efficient performance in their respective positions but also represent the most highly qualified of all persons applying for positions in the public service. The civil service procedures are also intended to give public employees maximum security and ample opportunity for promotion and professional growth in the public service. Only the more important procedures will be discussed in this chapter.

CLASSIFICATION The classification of public positions, except those specifically exempted (elective offices and a few other top policy-determining positions), is required by the laws governing civil service administration in Chicago, Evanston, Cook County, and the Sanitary District of Chicago. Classification according to the nature of the duties and responsibilities of each position is indispensable for efficient and economical personnel management. The classification process not only uncovers duplication of work but also provides a means for selecting the qualifications essential to satisfactory performance on the job. It also provides a basis for determining the tests which must be employed to ascertain the merit and fitness of applicants for civil service positions, fair and equitable salaries, and the proper procedures for efficient management of other personnel actions.

Although the Chicago Civil Service Commission pioneered in classifying duties from 1908 to 1912, it has failed to keep abreast of more recent developments in classification procedures. An adequate class specification, that is, a written job description, includes a title, definition, or general statement concerning the principal duties and responsibilities, specific examples of the work, and the minimum qualifications essential to the performance of the work. Class specifications for health and medical care positions in Chicago consist of little more than brief outlines of the duties. Practically no use is

made of them by the Civil Service Commission or by the operating agencies, and, indeed, it is difficult to see how they could be used in the present form for preparing examinations, fixing salary ranges, and for other personnel procedures.

The specifications for health and medical care positions in Cook County are similar to those of Chicago. They also consist of little more than brief descriptions of the duties and seldom are put to any use. Because the county health department was not organized until late in 1945, when civil service examinations had been suspended, no specifications covering such positions have been adopted by the Cook County Civil Service Commission. The county health department, nevertheless, uses a number of unofficial job specifications in selecting temporary appointees. The minimum qualifications contained in these were copied from the official state specifications for similar positions in the state health department. The unofficial county health department specifications, however, contain very poor descriptions of the work performed. The Cook County Civil Service Commission is now working with the health department in developing adequate specifications for all public health positions.

The specifications prepared by the Sanitary District Civil Service Board contain complete and detailed statements of the duties and responsibilities for each class of position. Part of the value of these class specifications is lost, however, because minimum qualifications are not included. Yet they are complete enough to be used in fixing salaries and in effecting promotions, demotions, and transfers.

The specifications for classes of positions in the Evanston Health Department contain all the basic factors, including minimum qualifications, necessary for adequate classification. They are valuable instruments. Those preparing examinations are able to determine from the specifications the subject matter to be covered and the types of tests that are appropriate.

Qualification standards to measure the eligibility of applicants for employment in public health are extremely valuable, particularly if they are used as guides rather than as inflexible rules. Career workers should be expected to present evidence of suitable preparation for their duties, either by technical training or by acceptable experience. Standards should not, however, be applied too rigidly. The trend is toward considering each case on its individual merits.

Examples of standards which have proved very helpful are those developed for public health nurses by the National Organization for

Public Health Nursing and those drawn up by the public health engineers (see Appendixes 4 and 6).

COMPENSATION Under a merit system of personnel administration, compensation should be based on the principle of equal pay for equal work. In other words, rates of pay should be fixed in accordance with duties and responsibilities together with due consideration of such economic factors as cost of living, the law of supply and demand in relation to local labor markets, and the prevailing wage rates in the locality for comparable positions in private industry. The preparation of a compensation plan based on the principle of equal pay for equal work is an administrative function best performed by the civil service agencies, since they are acquainted with the employment market and the duties and responsibilities of every position in the classified service. The appropriation of funds is, of course, a legislative function to be performed by the appropriating body.

The civil service agencies of Chicago, Evanston, and Cook County are given no legal powers to determine the salaries paid to public employees. The civil service law of the Sanitary District of Chicago makes it the duty of its civil service board to prescribe by rule, which becomes effective when approved by the trustees, the minimum and maximum pay rates for each grade and title in the classified service of the Sanitary District. For the most part, however, the salaries of health workers in the Chicago-Cook County area are determined exclusively by the local appropriating bodies.

An examination of the salaries paid employees rendering health and medical care services in Chicago and Cook County indicates that they are based, not on the principle of equal pay for equal work, but rather on tradition, favoritism, and political pressure. Labor unions have been effective in securing equitably adjusted salaries for some of the nonprofessional classes. In comparison, the salaries appropriated for professional and technical health and medical care positions are unfair and inadequate. In the Chicago Health Department, for example, a coal passer is paid \$3,150 annually, while a bacteriologist who must spend years in preparing for his work and who performs far more difficult duties receives only \$2,694 annually. A motor truck driver at the Municipal Tuberculosis Sanitarium is paid \$3,036 annually, while a head nurse at the same institution receives only \$2,548 for the same period. In many instances the salaries are fixed by the City Council of Chicago, and the agency concerned has no

control over the situation. In Cook County Hospital the annual salaries of boiler washers and senior chemists are \$3,384 and \$3,072, respectively.

In order to compensate for increased experience on a job and to provide an incentive and reward for efficient service, the usual practice in progressive communities and in the Federal Government is to establish minimum, maximum, and intervening rates of pay. However, this principle is for the most part ignored by Chicago, Evanston, and Cook County. Most of the salaries paid are merely flat rates. The Civil Service Board of the Sanitary District of Chicago does provide minimum and maximum rates, but intervening rates of pay between the minimum and maximum should be set up so that salaries could be increased progressively in accordance with additional experience and efficiency, as determined by the periodic efficiency reports.

EXAMINATIONS Various examination techniques are necessary to measure accurately the relative capacities for the many different types of jobs in public health and medical care programs. The examinations necessary to measure the knowledge and abilities of applicants for professional positions and for skilled nonprofessional and technical positions are relatively complex, whereas those for unskilled laborers may be simple and need not be competitive. For this reason, the rules and regulations of each civil service agency provide for the selection of unskilled laborers by lot or by alphabetical sequence from among those applicants passing a physical examination and meeting such entrance requirements for public employment as citizenship, residence, age, and character.

Written examinations are required almost invariably of applicants for positions which are not in the laboring class. Written examinations are of two general kinds. The first is subjective in nature and is usually known as the free-answer, or essay, type of written test. It is very difficult, if not impossible, to score such an examination in any uniform or reliable manner. The second, known as the short-answer type of written test, is objective, and is much more valid, reliable, inexpensive, and easily scored and administered than the subjective test. It is also preferable to the subjective test because it is far less subject to manipulation.

Although all applicants for positions in the classified civil service of Chicago, Evanston, Cook County, and the Sanitary District of Chicago must pass successfully an open competitive examination be-

fore appointment to a permanent civil service position, the objective form of examination, despite its many advantages, has not been used widely. The Chicago Civil Service Commission has used the subjective, or essay, type of written examination exclusively. The Cook County Civil Service Commission has limited its use of objective written tests to examinations in the Cook County Bureau of Public Welfare. The Evanston Civil Service Commission and the Civil Service Board of the Sanitary District of Chicago both have employed objective written tests on occasion, but the essay type is still used more widely.

QUESTIONS USED IN A CIVIL SERVICE TEST No amount of description of an article is as convincing as a sample of the article itself. On September 19, 1946, an examination was given by the Civil Service Commission of Chicago for the position of Junior Sanitary Engineer (Water Purification Division, Department of Public Works). What purports to be a copy of the written examination questions is presented below.

EXHIBIT A

CIVIL SERVICE COMMISSION

CITY OF CHICAGO

EXAMINATION—JUNIOR SANITARY ENGINEER (WATER PURIFICATION DIVISION)
BRANCH 11, CLASS D, GRADE 3

Subject—SPECIAL SUBJECT September 19, 1946 #5183 Orig.

SHOW ALL WORK IN FULL

1. A partial chemical analysis of water gives the following results in parts per million: Alkalinity, total 80; phenolphthalein, 10; total hardness, 120. What amounts of the following constituents are represented—free CO_2 carbonate hardness; bicarbonate hardness; noncarbonate hardness?
2. (a) How frequently should the residual-chlorine test be made?
(b) How frequently should bacteriological tests be made on the plant effluent?
3. Give the rate of chlorine application in pounds per 24 hr. necessary to provide a treatment of 0.25 p.p.m. on a constant pumpage of C.5 m.g.d.
4. (a) Describe in a general way methods of sewage purification.
(b) Discuss the relative efficiency of the system you have described.
5. Outline and describe the surveys you would make to determine the influence of waste materials upon the safety of public health at bathing beaches in Chicago. What laboratory tests should be performed?

6. Define "simple Chlorination," "Prechlorination," "Postchlorination," "superchlorination."
7. (a) Describe the troubles often encountered in keeping filter beds clean.
(b) Is there any relation between coagulation and filter bed troubles?
8. Prepare a diagram illustrating the flow of water *from your source of supply* through the filter plant to the clear water reservoir. This should include all operating units, pump data, pipe sizes, principal valves, etc.
9. (a) In estimating *average performance*, how should you calculate the average rate of filtration?
(b) Average rate of wash?
(Express results in gallons per minute per square foot of sand area)
10. What measures, in your opinion, are most likely to aid in improving the sanitation of a large city?

DO NOT SIGN YOUR NAME

This examination was open to all applicants over 21 years of age, with no requirements for minimum educational attainments. More specifically, the examination is considered defective on the following counts.

(1) Only four of the ten questions (1, 3, 4, and 6) are worded in such a way that concise and direct answers can be given by a person having knowledge of sanitary engineering.

(2) Question 2a. The frequency of the control test depends upon the quality and character of the water type of treatment process, size and type of treatment plant, and the extent of the distribution system. None of the above conditions is stated in the question, hence the question is meaningless.

(3) Question 2b. The frequency of bacteriological examination is also dependent upon various conditions, including those above mentioned and others not specified in the questions. No candidate, therefore, could possibly give a proper answer.

(4) Question 5. This is an indefinite essay type of question; an answer would be capable of a wide range of evaluation.

(5) Question 7a. Nothing is said as to the kind of filter bed, of which there are many different types, nor is anything specified as to the type of treatment, if any, preceding filtration.

(6) Question 7b. This question could be answered properly by "yes" or by "no," but such an answer would give no information as to the candidate's technical knowledge of these processes.

(7) Question 8. "Your Source of Supply" is a meaningless term,

since it affords no designated data as to source of supply, type and size of plant, consumer use, or area to be served. It is, therefore, absurd to expect a candidate to answer such a question intelligently.

(8) Question 9a. "Estimating average performance" is an incomplete thought from an engineering standpoint. Rates of filtration are universally established values in engineering practice, depending upon the type of filter. The terminology is, therefore, inconsistent with sound engineering conceptions.

(9) Question 9b. "Average rate of wash" means nothing unless one knows the type of filter and the type of wash involved. In rapid sand filters, for instance, both back wash and surface wash of the filter bed are practiced.

(10) Question 10. This is an essay type of question capable of a wide range of answers and consequently gives latitude for large variations in scoring. Moreover, it is poorly worded. It is presumed that the purport of this question is "what do you consider the most important sanitary measures for the protection of health in a large city?"

The inadequacies of this type of examination are obvious. Instead of attempting to construct examinations themselves, civil service boards should take advantage of the expert assistance which is available from the offices of the American Public Health Association. The association has for some time been preparing objective written tests for professional and technical public health positions. A vast amount of time and talent has been devoted by the association to the construction of valid and reliable examinations by experts of nationwide reputation. The examinations can be "tailor-made" to the needs of the agencies ordering them. They can be secured for a nominal fee upon request addressed to: The Director, Merit System Unit, American Public Health Association, 1790 Broadway, New York 19, New York.

ORAL TESTS Oral tests are also employed frequently in examining candidates for professional, technical, and supervisory positions in health agencies and medical care institutions. Instead of being restricted to the measurement of personal attributes, such as tact and ability to deal effectively with the public, which are often necessary for satisfactory performance on the job, they are frequently used to measure factors which can be evaluated better by some other testing device. The validity and reliability of the oral examination, even under the best of conditions, tend to be lower than those of a well-

prepared written examination. In addition, it is difficult to secure a reviewable record on an oral examination, and anonymity, the safeguard for impartiality, is seriously impaired. The oral examination, therefore, perhaps even more than the essay type of written test, is susceptible to manipulation.

OTHER METHODS Two other examining methods are employed in selecting personnel for professional, technical, and skilled health and medical care positions. The first of these consists of a rating of training and experience in which an applicant is required to submit a detailed job and educational history. The second method consists of a performance test. The performance tests are frequently used for clerical positions and other jobs requiring the performance of duties which can best be tested by this means. The Civil Service Board of the Sanitary District of Chicago has made the widest use of performance tests.

While examinations for original appointment are open to all applicants who meet certain age, citizenship, health, residence, and other special qualifications prescribed by laws and ordinances, promotional examinations are open only to employees holding positions in the next lower rank. The rules of the Chicago, Evanston, and Cook County civil service commissions provide that entrance examinations may be given for outsiders if fewer than two eligibles of the next lower rank within the organization apply. The rules of the Civil Service Board of the Sanitary District of Chicago provide that the board may hold an entrance examination for any grade of position if it is believed that a promotional examination is not feasible. In exceptional cases the Evanston Civil Service Commission permits promotion without competition if there are fewer than two applicants and if the duties of the lower position are a natural preparation for the higher position.

The promotional examinations are similar to those held for entrance examinations, except that two additional factors are considered, namely, seniority and job performance as ascertained by periodic efficiency ratings.

Entrance and promotional examinations are prepared jointly by the chief examiner of each civil service organization and the appointing authorities of the departments concerned. In the preparation of examinations for professional and technical positions, the advice and assistance of public health and medical care experts from outside the civil service are enlisted occasionally. Those preparing the examina-

tions are at a serious disadvantage, however, in determining what an applicant must know and what he must be able to do, because, except for the positions in the Evanston Health Department, the specifications are inadequate for determining not only the subject matter to be covered but also the appropriate methods for measuring the knowledges and abilities required.

CERTIFICATIONS When making an original appointment, the civil service agencies in the Chicago-Cook County area certify only the person standing highest on the list of eligibles for the position. A more usual procedure is to certify the names of the highest three on the eligible list. The certification of the highest three is justified on the basis of two arguments. In the first place, no test yet developed is valid and reliable enough to determine with absolute accuracy that the person with the highest score is actually better qualified than the persons with the second and third highest scores. Secondly, and this in a sense follows from the first argument, some discretion should be allowed an appointing authority so that he may choose from among the highest three the person he considers best fitted for his particular organization.

TEMPORARY APPOINTMENTS

Most of the public employees providing health and medical care services in the Chicago-Cook County area hold temporary appointments. The laws and rules governing civil service administration in each jurisdiction provide for temporary appointments in order that there need be no stoppage of the public business pending the selection of personnel by means of examinations and in order that vacancies may be filled in positions held by civil servants on military, disability, or other types of extended leave. In Chicago and Evanston temporary appointments are limited by law to a period of sixty days (reduced to eight weeks by regulation of the Chicago Civil Service Commission), but may be renewed any number of times until selection can be made from a regularly established list of eligibles.

In Cook County and the Sanitary District of Chicago, temporary appointments may be held for an indefinite time, pending the establishment of lists of eligibles from among the applicants who have passed a civil service examination successfully. The examination must be held and eligible lists established within sixty days following a temporary appointment in the Sanitary District; this requirement was waived for the duration of the war emergency. The periodic re-

newal of temporary appointments in Chicago and Evanston serves no useful purpose, and the time and money spent in preparing and checking long rosters of temporary appointees constitute a considerable waste.

The rules and regulations of each civil service agency provide that temporary appointees shall be selected by department heads and other appointing officers subject to the approval of the civil service agencies. Only the Evanston Civil Service Commission is required to base its approval on an investigation of the training, experience, and other qualifications of each applicant. The approval of the Chicago, Cook County, and Sanitary District civil service organizations is likely to be based on the recommendation of the patronage office of the dominant political organization.

One type of temporary appointment is used to meet two different kinds of temporary personnel needs by each of the civil service agencies in the Chicago-Cook County area. On the one hand, temporary appointments are employed to fill existing permanent positions for which all appropriate eligible lists have been exhausted and new permanent positions for which no examination has been held. On the other hand, they are employed to fill temporary and transitory or short-term jobs. A better practice is to employ provisional appointments to meet the first need and limited temporary appointments to meet the second need.

In generally accepted practice provisional appointments are limited usually to the period necessary for administering examinations and establishing lists of eligibles. Generally they are terminated within thirty days following the establishment of an appropriate list of eligibles, and rarely are they permitted to last more than six months from the original date of appointment. There is generally a specific prohibition against renewal of provisional appointments. No provisional appointment is permitted until a position has been officially classified. Finally, the executive officer of the civil service agency usually is required to certify that an applicant for provisional appointment meets the minimum qualifications in the class specification.

Temporary appointments usually are limited strictly to a period of six months. They are filled by the appointment of eligibles who have passed a civil service examination successfully, and have indicated a willingness to accept temporary work. Certification by the executive officer of the civil service agency is made in the same way

as for a permanent appointment. If an eligible accepts temporary appointment, such acceptance does not affect his standing on an eligible list, lest his chances for permanent appointment be jeopardized.

In the Chicago-Cook County area the laws and rules of each civil service agency provide for emergency appointments. There are no limits on the duration of such appointments in Chicago and Cook County. In Evanston they are limited to ten days; in the Sanitary District, to thirty days. The most common practice is to limit emergency appointments to a period of thirty days and to prohibit specifically, as provided by the Evanston rules, any renewal of such appointments. Little justification exists for the renewal of emergency appointments. If the emergency continues for more than thirty days, the position should be classified and filled by provisional, temporary, or permanent appointment. Emergency appointments in Chicago can be made only with the approval of the Chicago Civil Service Commission. The more usual procedure is to permit appointing authorities to make such appointments without regard to regular civil service procedures, except that of submitting reports of all emergency appointments to the civil service agencies within three days.

EVILS OF THE PATRONAGE SYSTEM

In a system based solely on merit, there is no place for patronage influence. There is, however, unmistakable evidence that patronage in the Chicago-Cook County area is a potent factor to be reckoned with in personnel procedures affecting the health agencies. Documentary evidence is difficult to obtain in matters of this kind, because informants, for obvious reasons, do not wish to be quoted, and those who deal in devious methods are well skilled in obliterating their trails. Nevertheless, the comments herein contained are based on more than irresponsible gossip. Evidences are derived, not from any single source, but from numerous individuals within and without the civil service system, all of whom are in general agreement on the major issues.

The patronage office secures its interests by attempting to control, usually successfully, initial and final action on the selection of temporary appointees. It not only reviews and recommends for approval the personnel selections made by the department heads and institutional superintendents, but also nominates the candidates usually chosen. Even though appointing officers might desire to select temporary appointees on the basis of merit and fitness alone, it would

be difficult to do so because of the political pressure which they would encounter in securing and holding their own jobs.

The ability of department heads and institutional superintendents to resist patronage office pressure is in direct proportion to the political influence and astuteness of these officers. Even speed is an important factor in circumventing the efforts of the patronage office. If an appointing authority asks clearance for a temporary appointee of his own choice before the patronage office can send him a nominee, the appointing authority frequently is successful in having the candidate of his choice finally appointed. In addition, the appointing authorities sometimes are able to fill vacancies in the more difficult professional and technical positions without interference simply because the patronage office is unable to nominate anyone who is qualified even remotely for such positions.

The qualifications of temporary appointees freely selected by the appointing authorities are entirely dependent on the attitudes, desires, and political influence of these officers. The Cook County Department of Public Health, for example, applies excellent qualifications, copied from the specifications for similar positions in the state health department, in selecting professional, technical, and even clerical appointees. If the persons nominated by the patronage office do not meet these standards, the county health officer will refuse to appoint them and at the same time will obtain clearance for better qualified persons of his own choice. Patronage pressures are not a problem in Evanston, and the Evanston health officer is free to select temporary appointees who meet the minimum qualifications listed in the official specifications for health department positions.

The patronage office, however, recruits and secures the appointment of the majority of temporary appointees engaged in health and medical care services in the Chicago-Cook County area. The lists of applicants maintained in the patronage office are made up of persons suggested by ward committeemen or other workers of the dominant political organization. The ability to deliver votes for the party is the most important qualification of such applicants. Secondary consideration must be given to actual qualification for the job, however, in order to avoid a noticeably high ratio of incompetents in the public service.

The patronage office also protects its interests in other ways. The Chicago Civil Service Commission will not certify the legality of a pay roll unless each name appearing on it has been cleared by the

patronage office. It will not hold a promotional examination when normal civil service procedures are in operation without the prior approval of the patronage office, because the higher and better-paying positions are the most important political plums. Promotional examinations have never been held, as a matter of fact, for the series of medical positions in the Chicago Board of Health. The last promotional examination for a supervisory public health nursing position was held in 1939, although between that time and the date on which all examinations were suspended a number of temporary appointments were made to such positions.

Temporary or patronage appointees enjoy none of the security and few of the rights and privileges accorded their permanent civil service colleagues. Although the temporary appointees of Cook County participate in the employees' pension and disability funds, these privileges are not granted temporary appointees in the public service of the city of Chicago. Most of the temporary appointees are obliged to engage in various political activities, because they owe their selection to the patronage office or to an appointing authority who needs help to maintain his own political position. Periodically they are asked to make contributions to the party treasury. At election times they are asked to perform various types of political organization, ward, and precinct work. Temporary appointees cannot afford to jeopardize their jobs by refusing to engage in these types of activity.

Although temporary appointees may be dismissed without the opportunity of an impartial hearing on specific charges, paradoxically, supervisors find it difficult to dismiss or discipline temporary appointees who are incompetent. The reason is that temporary appointees frequently obtain the backing of the patronage office, which is able to countermand the orders of a supervisor. Frequently, also, supervisors are forced to promote temporary appointees who have the backing of the patronage office, despite the fact that such employees may not be qualified for more responsible positions. All these conditions have a seriously demoralizing effect on the permanent civil service employees, who may be denied promotions they have earned by years of hard work, because they lack the necessary political qualifications.

The merit principle involves more than technical qualifications for a job. It presupposes a total disregard of political affiliation or endorsement, which should militate against rather than for an appli-

cant for appointment, since anyone who obtains a position under these circumstances inevitably is subjected to a divided allegiance between the endorsing and the appointing agents. In good personnel practice all possibility of allegiance to anyone except the employing agency must be eliminated. Moreover, as an index to impartiality in employment, it would be of interest to know the ratio of employees affiliated with the party in power to those of minority political groups in comparison with similar ratios in the community as a whole.

SUMMARY

1. The Chicago and Cook County civil service commissions play an important role in lending respectability to the patronage office in the maintenance of its control over these appointments.

2. The present method of temporary appointment must be abolished if personnel administration in public health agencies and medical care institutions is to be based on the merit principle. Several different types of appointment are necessary to meet emergency and temporary personnel needs.

3. The classification of public health and medical care positions in Chicago and Cook County is seriously defective. Classification cannot be used as a vital instrument of efficient and economical management so long as the present classification practices are continued.

4. There are no provisions for removing from active duty those superannuated civil service employees who are incapable of performing satisfactory service.

5. The salaries and wages paid public health and medical care workers are inequitable and in many cases inadequate. In most cases they are fixed in accordance with tradition, favoritism, or political pressures. The civil service agencies, with the exception of the Civil Service Board of the Sanitary District of Chicago, are without authority to plan compensation in accordance with the principle of equal pay for equal work.

6. The examining methods employed by the civil service agencies, particularly the Chicago and Cook County commissions, are antiquated, inaccurate, and susceptible to manipulation. Little attempt has been made to modernize and improve testing procedures so as to provide a more valid and efficient means for selecting the best qualified applicants for public health and medical care positions.

The following recommendations are designed to strengthen the machinery of civil service administration in the Chicago-Cook

County area. If adopted, they will require numerous changes in the civil service laws, rules, and regulations governing public personnel administration in Chicago, Evanston, Cook County, and the Sanitary District of Chicago.

RECOMMENDATIONS

It is recommended that:

1. The present system of temporary appointments shall be replaced by providing for provisional, emergency, and limited temporary appointments. Adequate safeguards should be adopted to ensure the proper use of each of these types of appointment.

2. A complete classification survey shall be made of all public health and medical care positions in Chicago and Cook County. The survey should be conducted by trained personnel technicians with the full co-operation and assistance of the civil service agencies and the personnel of the various agencies and institutions.

3. In connection with the survey, new class specifications covering all health and medical care positions shall be prepared and existing positions shall be reallocated on the basis of actual duties and responsibilities.

4. Whenever a civil service commission exists, it shall be given legal authority to prepare and recommend to the local appropriating bodies compensation plans establishing salary ranges for the entire classified service and to fix salary ranges established in the plans in accordance with (a) the duties and responsibilities of each class of positions, (b) prevailing wage rates for positions of comparable difficulty and responsibility in other public agencies in the locality and in private industry, (c) the law of supply and demand in relation to local labor markets, and (d) the cost of living.

5. The examination program of each civil service agency shall be improved by a greater use of objective written tests and by a more limited use of oral tests, and the oral tests shall be used to measure personality factors instead of subject matter.

6. The three highest names on an eligible list for original appointment shall be certified by the civil service agencies whenever a requisition to fill a vacancy is made.

7. There shall be adopted by the health departments of Chicago and Cook County and by other full-time units a definite policy of promotion in accordance with merit and length of service.

8. In the interest of recruiting the best possible talent available,

the health departments in the Chicago-Cook County area shall abolish all restrictions as to place of residence of candidates.

9. The merit principle shall be interpreted to include complete independence of patronage endorsements.

10. The civil service regulations shall be revised so as to provide for a maximum age limit not to exceed seventy.

THE VOLUNTARY HEALTH AGENCIES IN THE CHICAGO-COOK COUNTY AREA

by *Dudley A. Reekie, M.D.*, and
K. E. Miller, M.D.

THE HEALTH WORK of the voluntary agencies in the Chicago-Cook County area has been described again and again in the preceding pages, particularly in relation to maternal and child health services, tuberculosis control, public health nursing, nutrition, and health education. Some of these agencies pioneered in the provision of services now recognized as health department responsibilities. The findings of the survey revealed that in some cases voluntary agencies are duplicating services which official agencies maintain; in other cases they provide service to groups and in areas not covered by the health department. In general, in Chicago as elsewhere, the programs of the voluntary agencies are likely to stress particular aspects of health service.

The number of voluntary agencies engaged in health and welfare work in the Chicago-Cook County area is so great that it proved impossible within the time limits set for the Chicago-Cook County Health Survey to study the operations of every agency. During the fiscal year 1944-45 the Association of Commerce of Chicago endorsed 262 philanthropic organizations in Chicago alone.¹ The contributions to these agencies, reported by the Association of Commerce of Chicago as available for use within the area, totaled \$22,504,865. Of this total, \$16,857,012. was used for current operating expenses. An additional \$5,647,853 was contributed in capital gifts.

While the programs of all these voluntary agencies may have some health implications, comparatively few are engaged in health work to such an extent as to merit special comment. In Chicago alone the

¹ For a complete list, together with a brief description of the purpose and activities of each agency and its 1945 expenditures, see *A Classified List of Local Philanthropic and Charitable Organizations, 1946 List*, "believed by the Chicago Association of Commerce and Industry Subscriptions Committee to merit the support of the general business community."

programs of thirteen agencies appear to have a direct bearing upon health. Ten agencies which operate in both Chicago and Cook County and 5 which limit their services to Cook County outside Chicago or to specific communities in the county fall into the same category. According to the Chicago Association of Commerce these 28 voluntary agencies, all endorsed by the association, spent a total of \$1,864,595 during their 1944-45 fiscal years for health and related activities. Of this total, \$1,730,278 was reported by the 23 agencies operating either in Chicago alone or in the entire Chicago-Cook County area, and \$134,317 by agencies in Cook County outside Chicago. The \$1,730,278 reported for Chicago activities is almost a fourth of the \$4,424,517 expended through official Chicago health agencies. It is a most impressive sum. The civic spirit, brainpower, physical work, sacrifice, and devotion required to amass this amount of money portray a great citizenship with a profound interest in better health for the Chicago-Cook County area. Such forces integrated with a sound official health program would yield a health service with almost unlimited possibilities.

THE PROGRAMS OF THE VOLUNTARY AGENCIES

The twenty-eight agencies are listed in Table 117. Their health interests include the prevention or the treatment of tuberculosis, the venereal diseases, poliomyelitis, cancer, heart diseases, blindness, and psychiatric disorders among children. On the promotional side, they include infant and maternal care, summer "roundups" for pre-school children, dental health, and nutritional improvement. A large part of the work of voluntary agencies in the health field is educational and promotional. Since work of this nature supplements rather than competes with the work of the official health agencies, there is no occasion for an analytical study of the agencies in this category and no reason for much special comment, except to say that their educational programs should be closely co-ordinated with those of the official health agencies.

Some of the findings of the Committee of Fifteen in regard to the enforcement of laws against commercialized prostitution were presented in Chapter 27 (Venereal Disease Control). Information about the programs of the Institute for Psychoanalysis and the Illinois Society for Mental Hygiene are given in Chapter 29 (Mental Hygiene). The public health nursing activities of the American Red Cross are described in Chapter 34 (Public Health Nursing).

TABLE 117. VOLUNTARY AGENCIES IN THE CHICAGO-COOK COUNTY AREA WHICH CONDUCT SERVICE PROGRAMS PRIMARILY FOR THE PREVENTION OF PHYSICAL AND MENTAL SICKNESS, SERVICE TO THE CRIPPLED, AND CONVALESCENT CARE

| <i>Agencies Operating in Chicago (or Chicago and Cook County)</i> | <i>Most Recent Report of Annual Expenditures.</i> |
|--|---|
| American Cancer Society—Illinois Division | \$ 3,442 |
| Chicago Chapter—American National Red Cross | 119,916 |
| Chicago Heart Association | 16,848 |
| Chicago Maternity Center | 52,877 |
| Chicago Society for the Hard of Hearing | 16,017 |
| Chicago Tumor Institute | 54,435 |
| Committee of Fifteen | 11,966 |
| Cook County Chapter of the National Foundation for Infantile Paralysis | 125,046 |
| Elizabeth McCormick Memorial Fund | 80,000 |
| Frances Juvenile Home | 3,074 |
| Illinois Association for the Crippled | 26,785 |
| Illinois Society for Mental Hygiene | 23,563 |
| Illinois Society for the Prevention of Blindness | 24,785 |
| Infant Welfare Society of Chicago | 163,632 |
| Institute for Psychoanalysis | 53,671 |
| La Rabida Jackson Park Sanitarium | 55,083 |
| Loyola Center for Child Guidance and Psychological Service | 5,453 |
| Martha Washington Home for Dependent Crippled Children | 27,355 |
| Ridge Farm Preventorium | 35,002 |
| Sunset Camp Service League | 36,766 |
| Tuberculosis Institute of Chicago and Cook County | 272,860 |
| Visiting Nurse Association of Chicago | 339,013 |
| Winfield Tuberculosis Service | 182,689 |
| Sub-total | \$1,730,278 |
| <i>Agencies Operating in Cook County outside Chicago</i> | |
| Country Home for Convalescent Children of the University of Chicago | \$ 69,367 |
| Evanston Visiting Nurse Association | 38,519 |
| Infant Welfare Society of Evanston | 14,000 |
| Infant Welfare Society of Oak Park | 7,219 |
| Wilmette Health Center | 5,212 |
| Sub-total | \$ 134,317 |
| Total | \$1,864,595 |

^a The expenditures listed do not necessarily mean the entire expenditures of any given agency, but only those specifically for activities related to health.

The programs of the following agencies or institutions are implied in their names: The Martha Washington Home for Dependent Crippled Children, the Loyola Center for Child Guidance and Psychological Service, the Winfield Tuberculosis Service, Inc., and the Country Home for Convalescent Children. The Francis Juvenile Home Association treats and helps children afflicted with venereal diseases; the La Rabida Jackson Park Sanitarium and the Sunset Camp Service provide convalescent care for children with cardiac conditions, and the Ridge Farm Preventorium provides convalescent care for malnourished and convalescent girls.

The following agencies, although their programs have been described in earlier chapters, have been selected for further discussion in this chapter because their activities in the field and in the provision of clinic services are at times closely intermeshed with the activities of the official health agencies: the Tuberculosis Institute of Chicago and Cook County; the Infant Welfare Societies of Chicago, Evanston, and Oak Park; the Elizabeth McCormick Memorial Fund; the Chicago Maternity Center; the Visiting Nurse Associations of Chicago and of Evanston. The health activities in the clinics or the outpatient departments of voluntary hospitals will also receive special mention.

THE TUBERCULOSIS INSTITUTE OF CHICAGO AND COOK COUNTY

This agency is one of the oldest of the voluntary group in the Chicago-Cook County area. It is amply supported by revenues from the annual sale of antituberculosis Christmas seals (\$250,000 in 1945), plus special contributions from some twenty-eight official organizations in fifteen communities in Cook County. As its name implies, the Tuberculosis Institute is supposed to operate in Chicago as well as in the areas of Cook County outside Chicago. Because of the unwillingness of the board of directors of the Municipal Tuberculosis Sanitarium to sanction work by the Tuberculosis Institute within the corporate limits of Chicago, it does comparatively little in the city itself. Since the Tuberculosis Institute is a voluntary agency, it is difficult to understand what authority the Municipal Tuberculosis Sanitarium could have over the Tuberculosis Institute's program.

After all, the Chicago Health Department rather than the Municipal Tuberculosis Sanitarium is charged officially with the responsibility for the control of communicable diseases, including tuberculosis. On the other hand, antagonistic competition between the Municipal Tuberculosis Sanitarium and the Tuberculosis Institute would be unwise. The extent of the tuberculosis problem in Chicago, however, is of sufficient magnitude to require all available forces. For illustration, there is no systematized and comprehensive search for cases of tuberculosis in the city and county. To maintain a proper standard of case-finding, X-ray examination of 500,000 persons per year would be required. Still other needs were pointed out in Chapter 26.

For either agency to pre-empt the field to the exclusion of the other would be a short-sighted policy. Clearly, co-operation and co-

ordination between the two agencies will cure this unhappy relationship, which exists at the expense of tuberculosis sufferers. The necessity for a close integration of all voluntary antituberculosis services with the work of official health agencies is obvious.

The annual report of the Tuberculosis Institute for 1945 presents statistics for the following types of service covered by this agency's program: communicable disease control, tuberculosis control, maternity services, infant and preschool hygiene, school hygiene, morbidity service, services for crippled children, discovery and correction of defects in children, and tuberculosis case count. Only two of the nine types listed are concerned directly with antituberculosis activities. Since practically all these services were provided in areas of Cook County outside Chicago, it is clear that the Tuberculosis Institute has been maintaining all the major field functions of a generalized county health service except sanitation. The Tuberculosis Institute has made a monumental contribution in thus substituting as a county health unit in the absence of an organized county health department. Now that the Cook County Department of Public Health has been established, it is time for the Tuberculosis Institute to consider transferring all its generalized health services to the official agency legally responsible for providing them. This procedure was included in the recommendations for public health nursing.

THE INFANT WELFARE SOCIETIES OF CHICAGO, EVANSTON, AND OAK PARK

The Infant Welfare Society of Chicago was established in 1910 as the outgrowth of and the successor to the Chicago Milk Commission, which was organized in 1903. It guided the later development of the Evanston and the Oak Park societies.

The Infant Welfare Society of Evanston provides health supervision and bedside care for infants over three weeks of age and preschool children attending or eligible for admission to its child welfare stations. Health supervision is given to any postpartum patient and her baby if the mother was not under the care of the Visiting Nurse Association during the antepartum period. The Evanston Health Department operates only a restricted program in infant and preschool hygiene.

The Oak Park Health Department does not include maternal and child health services in its nursing program. The Infant Welfare Society of Oak Park and River Forest provides health instruction

and demonstration in the care of the newborn, infants, and preschool children.

The Infant Welfare Society of Chicago operates twenty-one stations in localities in which the Chicago Health Department has made no provision for maternal and infant care. The Chicago Health Department maintains thirty-seven infant welfare stations in other sections of Chicago, a number of which conduct prenatal as well as infant conferences. The Infant Welfare Society's program is superior to that conducted by the Chicago Health Department for the following reasons: It includes children until they enter school; the public health nurses follow up the advice that is given at clinics with home demonstrations; it emphasizes the nutrition and child guidance phases of raising healthy children; it has a complete service manual, including all procedures at clinics and for home follow-up visits and demonstrations by its public health nurses; the society records are continuous and cumulative.

The Infant Welfare Society of Chicago should consider (1) more co-ordination of its twenty-one stations with those of the Chicago Health Department; (2) assisting the health department in the development and use of a procedure and training manual on the conduct of maternal and child welfare clinic services and home visiting throughout Chicago; (3) conducting a maternal and child health demonstration center for training physicians, nurses, and nutritionists for maternal and child health service within the Chicago Health Department; (4) undertaking a rotation of special nutrition and child guidance demonstrations throughout the system of city maternal and child health stations; and (5) undertaking any special studies that from time to time may be indicated.

The Infant Welfare Society of Evanston, which provides most of the infant welfare services for that city, should consider combining its files with those of the health department in a family folder system. This procedure would tend to eliminate duplication of home nursing visits by nurses engaged in other phases of public health, such as communicable disease control, including tuberculosis and immunizations.

THE VISITING NURSING ASSOCIATIONS OF CHICAGO AND OF EVANSTON
The comprehensive nursing programs of these two associations have been described in Chapters 34-36 (on public health nursing). They provide the bedside nursing care, particularly for persons suf-

fering long-term illnesses, which is not included in the health department programs. In Chicago the Visiting Nurse Association gives instruction and bedside nursing for the first week after the birth of a baby to women delivered at home by the staff of the Chicago Maternity Center. The program of the Evanston Health Department does not include prenatal and postnatal health supervision and nursing care. This service to mothers and to infants up to three years of age is provided by the Visiting Nurse Association. Both the Chicago and the Evanston associations give bedside care to persons handicapped by accidents, cases of acute communicable disease, post-poliomyelitis patients, and others needing treatment for orthopedic conditions. The Visiting Nurse Association of Chicago maintains three orthopedic centers where ambulatory patients may receive physical therapy treatments. Nurses from the Visiting Nurse Association of Evanston provide physical therapy service at one of the public schools and at the office of the association.

THE CHICAGO MATERNITY CENTER

This voluntary agency had its beginning fifty-two years ago and has throughout these years supervised more than one hundred thousand births in private homes. Its program of home delivery of babies is community-wide and involves the delivery of approximately two thousand babies each year, or 3.3 percent of the total births in Chicago for the year 1945.

After the first week, during which nursing care to the mother and the infant is provided by nurses from the Visiting Nurse Association of Chicago, the health department nurses make home visits until the mother with her infant is able to attend the nearest maternal and child health station.

Medical students, interns, and resident physicians spend from two weeks to three months with the Chicago Maternity Center, learning its techniques of home delivery of babies. More than thirteen thousand home visits were made in 1945 by these physicians, interns, and medical students, and by nurses. Complicated cases are hospitalized in a few beds regularly set aside for the agency in two of the local hospitals. The work of this agency not only is important for the saving of lives of mothers and infants in families too poor or for other reasons unable to go to a hospital for obstetrical care, but is essential to the training of the medical students, interns, and nurses in the problems of nonhospital delivery.

ELIZABETH McCORMICK MEMORIAL FUND

This agency's program was described in Chapters 38 and 39 in its relation to nutrition and health education. Its over-all program combines the functions of research, service, demonstration, and planning for community health needs.

In 1908, when the Elizabeth McCormick Memorial Fund was established, the fields of health education and health prevention were developed to only a slight extent. Some of the fund's earliest work was in connection with infant welfare and open-air schools and in the promotion of measures to improve the conditions operating against child health. These programs and others in succeeding years have followed the policy of providing limited demonstrations of health education, nutrition, and health supervision, with the hope that as a result of these demonstrations similar programs might be established on a more extensive scale by official agencies.

Intensive studies of the condition of children have been of influence in focusing attention on needs. These studies have furnished a basis not only for the fund's own program but also for programs of other agencies. Its present preventive health program includes investigative studies of the condition of children, health and nutrition supervision and consultant service in nursery schools and day nurseries, advisory service in children's institutions and summer camps, demonstrations of child health supervision in co-operation with the Chicago Department of Welfare and the Cook County Bureau of Public Welfare, parent education, and inservice training of personnel of children's institutions. During 1945 these services reached 3,700 children.

A specialized library of twenty thousand titles and one hundred fifty periodicals covering the fields of child health and development and related fields is maintained as a community service.

Of its professional staff, nine full-time workers are employed in the preventive health program, representing the fields of social service, nutrition, child development, and community organization. In addition, six pediatricians are employed on a part-time basis.

HEALTH SERVICES IN THE OUTPATIENT DEPARTMENTS OF
VOLUNTARY HOSPITALS

The health services provided in the outpatient departments of voluntary hospitals are difficult to evaluate. Activities such as immuniza-

tions against communicable diseases, mental hygiene, nutritional services, blood examinations for syphilis, chest X-ray examinations for tuberculosis, treatment of syphilis, and treatment of pulmonary tuberculosis are provided to some extent in outpatient department clinics. They are in most instances, however, occasional rather than routine services and are incidental rather than major clinic functions. Generally speaking, the clinic records are not kept in such a way as to make it possible to separate and tabulate records of health services from the mass of clinic data. To do so would require a study of the individual records of each clinic. It was, therefore, not practical to attempt a volumetric measurement of health services in outpatient departments.

Twenty-four of the thirty-six outpatient departments of voluntary hospitals in Chicago and Evanston answered a questionnaire requesting certain statistical data. Tabulation of the replies brought out some significant figures. Since some of the largest outpatient departments did not attempt to give a numerical evaluation of the services performed, the totals presented must be considered highly conservative.

Blood examinations for syphilis are made routinely by 19 of the 24 clinics and occasionally by 4. The total number of examinations reported for 1945 was 65,537. Eight departments reported that chest films for tuberculosis were taken routinely; 16, only occasionally. The total number of chest films reported was 6,259.

The 24 reporting outpatient departments also returned 1945 statistics about various clinic services generally considered of a preventive or public health nature. Regularly scheduled immunization clinics were reported by 10 outpatient departments and occasional clinics of this type by 5. A total of 7,564 immunizations were given at the 15 clinics. More than 77,400 treatments for venereal diseases were reported by 11 outpatient departments scheduling regular clinics and by 4 which held occasional clinics. Three outpatient departments reported regularly scheduled clinics for treatment of tuberculosis, and 2 stated that occasional clinics were held. Total treatments numbered 2,723. The substantial volume of service rendered by nutrition clinics in the outpatient departments of 15 Chicago hospitals was pointed out in Chapter 38 (39,520 visits in 1945). Ten outpatient departments held regularly scheduled mental hygiene clinics, and 2, occasional clinics. The 12 clinics reported a total of 4,475 visits.

The figures cited are useful only as general indices, since one third of the clinics in this area are not represented. They do, however, demonstrate rather convincingly that the clinics in the outpatient departments of voluntary hospitals do make a significant contribution to the public health aspects of medical service. Moreover, they indicate the possibility of a much wider expansion of public health clinic services in outpatient departments of hospitals.

GENERAL COMMENTS

In the interpretive study of the voluntary health agencies in this country made by Selskar N. Gunn and Philip S. Platt,² the authors proposed an over-all co-ordinating body to effect a better balance in the collection and distribution of voluntary funds in such a way as to achieve the maximum benefits to the health program as a whole. Such an arrangement would be highly desirable, but it must be remembered that people give of their time, talents, and money to those problems which are nearest to their hearts. It would be unwise to attempt too rigid a regimentation of voluntary giving. On the other hand, the giving public would be wise to become well informed about the needs in the different fields and the effectiveness of the voluntary agencies which request contributions in order to meet these needs. Provision of such information is a job for the health authorities and the newspapers. They have the opportunity to educate prospective givers to make an intelligent selection of the agencies to whom they contribute. A careful study of the discussion of national agencies presented in the Gunn-Platt report would be most helpful.

The principles outlined in regard to national agencies should be applied also to those which are sponsored locally. Many of the voluntary agencies in the Chicago-Cook County area are of this type.

The work of both local and national voluntary agencies in the health field, however, should be geared in with the work of the legally constituted bodies officially responsible for the prevention of disease and the promotion of health.

It is a well-recognized fact that voluntary agencies must maintain their identities if they are to survive and progress. This does not mean, however, that they should operate independently and apart from every other agency. Field workers engaged in those aspects of the voluntary program which relate to health could, with profit to

² Selskar M. Gunn and Philip S. Platt, *Voluntary Health Agencies*. New York, Ronald Press Company, 1945.

their respective organizations, be under the administrative direction of the official health agency without in any way jeopardizing their identities. This plan would ensure complete co-ordination of effort and would strengthen mutually the work of both the official and the voluntary agencies.

RECOMMENDATIONS

It is recommended that:

1. The Council of Social Agencies of Chicago shall use every available influence for co-ordinating and integrating the activities of voluntary agencies in the interest of minimizing duplication of effort and rivalry between the voluntary and official health agencies.
2. The voluntary agencies operating in health fields shall function primarily to: (1) demonstrate new methods of disease prevention and health promotion; (2) foster the various phases of health education; (3) supplement rather than substitute for the work of official health agencies; (4) promote legislation to improve public health.
3. The voluntary agencies shall consider investment of funds, insofar as practicable, in equipment for use of the official agencies instead of in direct field service.
4. As soon as official health agencies are able and willing to assume the full responsibility for health services in their respective jurisdictions, they should be expected to relieve the unofficial agencies of this type of work.
5. The voluntary agencies shall review and modernize their by-laws regulating policies and practices in their respective fields of service.

ORGANIZATION AND ADMINISTRATION OF OFFICIAL HEALTH AGENCIES

by *K. E. Miller, M.D.*

THE FUNCTIONS AND RESPONSIBILITIES of official health agencies are constantly changing and increasing as the field of public health itself continually develops and broadens in scope. The best health agency of fifty years ago would be very crude and inadequate at the present time. Any health agency, therefore, requires periodic overhauling in order to bring it into line with the most advanced public health concepts, which alone will yield maximum dividends. The following discussion is presented with this objective in view.

POLITICAL SUBDIVISIONS AND HEALTH JURISDICTIONS

Cook County has the following political subdivisions: (1) the city of Chicago, comprising nine townships. For administrative purposes this area always has been recognized as a single unit; (2) seven cities or villages—Evanston, River Forest, Oak Park, Riverside, Berwyn, Stickney, and Cicero—each of which is coextensive with the township boundaries within which it is located; (3) eighty-two other municipalities, located in twenty-two other townships.

Thus, there are in Cook County, outside the city of Chicago, twenty-nine townships, and eighty-nine municipalities (including the seven cities or villages). The extent to which each of these political subdivisions may maintain individual health jurisdictions is indicated in the next paragraph.

An act of the Illinois Legislature in 1901 made each township outside Chicago a separate health jurisdiction, responsible for providing its own health services. This policy was continued until the establishment of the Cook County Department of Public Health in December, 1945, in accordance with an act of the state legislature in 1943, amended in 1945. The amended act permits a county health department to assume responsibility for the official health services of

all rural communities (townships), including unincorporated towns not served by a full-time health officer. Incorporated communities (municipalities) which maintain full-time health departments still have the right to operate these departments as independent units, although they may by common consent join the county health department. At the time of the Chicago-Cook County Health Survey, however, Cook County had a multiplicity of small and unco-ordinated health jurisdictions.

WEAKNESSES OF SMALL HEALTH UNITS While some of these small health jurisdictions in Cook County, in addition to registration of births and deaths, have made feeble efforts to impose quarantine, abate nuisances, and even to carry on public health nursing, their services have been unco-ordinated and of a character reminiscent of "horse-and-buggy days" and the dark ages of public health. Diseases recognize no jurisdictional boundaries. To be effective, control of communicable diseases not only must be uniform within a wide area but also must be administered by technically-trained forces such as are available only in a modern health department. Operation of an up-to-date and effective department costs money. Attempts to provide health services with the meager funds usually appropriated for this purpose by small units of government are futile. The undoubted inadequacy of the health work in the smaller municipalities and rural townships in Cook County is revealed strikingly by the total 1946 appropriations for this purpose: 11 municipalities of 5,000 to 10,000 population, \$23,700; 33 municipalities of 1,000 to 5,000 population, \$4,880; 21 municipalities of less than 1,000 population, \$760; 23 rural townships, \$16,185.

Out of the welter of health jurisdictions in Cook County only seven merit further discussion: Evanston Department of Health; Winnetka Health Department; Cicero Health Department; Berwyn Health Department; Oak Park Board of Health; Cook County Department of Public Health; and Chicago Health Department.

GAPS IN SERVICE Before attempting an analysis of these seven health agencies, some general observations are appropriate. Not one of them undertakes all the functions for which a well-balanced health department should be responsible. In other words, there is no instance in the Chicago-Cook County area where a health department may be considered a complete service unit. Without exception, voluntary agencies are doing work that should be carried by the official health agencies. Good examples are the activities of the Infant Wel-

fare Society of Chicago and the Tuberculosis Institute of Chicago and Cook County. Important health functions have been transferred from the official health agency to other branches of local government; as, for example, sanitary inspection and vermin control in Chicago to the Department of Building, and the control of tuberculosis throughout Chicago to the Municipal Tuberculosis Sanitarium. Still other health department functions are being neglected by all the official health agencies in Chicago and are discharged poorly elsewhere. Conspicuous in this category is the medical examination of school and preschool children.

These criticisms do not mean that a given health agency is not doing creditable or even outstanding work in one or more fields, but work of this character is spotty in its distribution.

The financial resources of all these health agencies are discussed in Chapter 43.

FIVE MUNICIPAL HEALTH DEPARTMENTS

Since the major emphasis must be placed upon the activities of the Chicago Health Department and the Cook County Department of Public Health, the work of the five smaller health departments will be discussed first.

EVANSTON DEPARTMENT OF HEALTH *Organization and personnel.*—Chronologically, Evanston deserves to be considered first, because as early as 1874, three years before the formation of the Illinois Department of Public Health, a board of health was appointed, which consisted of the mayor and two physicians selected by the Health Committee of the City Council of Evanston. One of the physicians was designated as the health officer. A code adopted in 1892 to regulate and secure the general health of the inhabitants of Evanston has not been changed materially since that time.

The personnel of the Evanston Health Department consists of a full-time medical officer as director, six part-time physicians, six nurses, three inspectors, three laboratory workers, one health educator, and four clerical workers. The director, laboratory workers, and health educator possess qualifications considered acceptable for their respective duties. Four of the six nurses have technical preparation which meets the standards of the National Organization for Public Health Nursing.

Functions.—The health department exercises control over communicable diseases by all the well-known methods, among which im-

munization has been outstanding. An enviable record has been achieved also in the examination of preschool children, accomplished largely through the services of local pediatricians. Health services are conducted in the parochial schools also, but the health department assumes no responsibility for this type of work in the public schools. Public health laboratory services are provided by the department for the area under its jurisdiction. Environmental sanitation, including housing inspection, is an important function of the department, which is performed with a fair degree of efficiency. The inspection of food handling, including milk and frozen desserts, while scoring above the average for the metropolitan area, is still below the accepted standard.

In Evanston the voluntary agencies play a very active part in the health program. The three major associations in this field are the Tuberculosis Institute of Chicago and Cook County, the Infant Welfare Society of Evanston, and the Visiting Nurse Association of Evanston. All these agencies occupy offices in the health department building. They work in close harmony with the official health agency, but the co-ordination of their activities with those of the health department is one of the major problems of the health officer.

WINNETKA HEALTH DEPARTMENT *Organization and personnel.*—Official organization of a health department in Winnetka took place in 1927. A seven-member board of health composed of both doctors and laymen is appointed annually by the village manager. The Winnetka Health Department provides health services to the Village of Kenilworth, and the Winnetka schools and township and inspects milk for various North Shore municipalities.

A full-time physician with a M.S.P.H. degree, four nurses, one sanitary engineer with a M.S.P.H. degree, one sanitarian, and one clerk complete the staff of this health organization. Two of the four nurses are qualified in accordance with the standards of the National Organization for Public Health Nursing. The health officer is employed by the village manager, to whom he is responsible. All subordinate personnel are selected by the health officer and are responsible to him. Terms of office for all are indefinite, depending only upon satisfactory performance. Retirement insurance is provided each employee.

Functions.—The Winnetka Health Department exercises control over communicable diseases, including tuberculosis. Persons with venereal diseases attend the Evanston Venereal Disease Clinic.

The immunization program in Winnetka and Kenilworth is outstanding. Ninety-four percent of the children under five years of age are immunized against diphtheria, 92 percent against smallpox, and 61 percent against whooping cough. All school and preschool children are examined each year by local physicians. The health department supervises a school health program in both public and parochial schools. Public health laboratory services are contracted for in a local bacteriological laboratory. Environmental sanitation, including supervision of food establishments, is an important function of the department. All elementary and junior high school teachers and food handlers are X-rayed periodically for evidences of tuberculosis.

CICERO HEALTH DEPARTMENT *Organization and personnel.*—Cicero retained its township form of government and did not take advantage of incorporation under the Illinois Cities and Villages Act. Its board of health, first organized in 1918, is composed of town supervisor, town attorney, and captain of police. A part-time health officer, three part-time physicians, four nurses (one meeting the qualification requirements of the N.O.P.H.N.), a dentist, two sanitarians, and a clerk complete the health staff.

All the health department staff are appointed directly by the town supervisor and hold office at his discretion. As a result, it naturally follows that there may be a complete change in the health department personnel with each change in political control. Cicero also pays half the salary of a nurse from the Tuberculosis Institute of Chicago and Cook County.

Functions.—The health department exercises control over communicable diseases and sends all cases with major communicable diseases to the contagious wing of the Cook County Hospital. The health officer is also the town physician. In this capacity he gives medical attention to indigent patients. School health services include a first-aid service and examination of children after absences. Such health service as there is in schools is secured by contract with physicians and public health nurses and is not under the jurisdiction of the health department. The Tuberculosis Institute of Chicago and Cook County holds a regular tuberculosis clinic in Cicero and a local voluntary welfare center offers maternal, infant, and preschool health services, including immunizations and dental care.

BERWYN HEALTH DEPARTMENT *Organization and personnel.*—The Berwyn Health Department has been in existence for twenty-three years. It operates under a board of health composed of the

town supervisor, town clerk, and town assessor, and occupies as a health center a building especially designed and built by the Works Progress Administration. The staff consists of a part-time health officer, two public health nurses, assisted by two nurses from the Tuberculosis Institute of Chicago and Cook County, four sanitarians, a chemist, and two clerks. No member of the staff meets standard qualification requirements.

Functions.—The department records all births and deaths in Berwyn and investigates and quarantines communicable diseases. Three baby welfare clinics are operated, and last year 232 children were immunized against diphtheria, 247 against whooping cough, and 191 against smallpox. Four sanitarians inspect establishments handling milk, meat, bakery products, and other foods. Ratings of such places, however, are not governed by the generally accepted sanitary standards. Barber shops and beauty parlors are inspected also. Inspections of school children are made by public health nurses and the department provides medical and dental corrections for children unable to pay for these services. The mobile X-ray equipment of the Tuberculosis Institute of Chicago and Cook County is available annually for X-raying all school teachers and any others who wish this service. Laboratory services for the town are provided partly by the local health department and partly by the Chicago branch laboratory of the state health department.

OAK PARK BOARD OF HEALTH *Organization and personnel.*—Oak Park seceded from Cicero in 1899 and an ordinance in Oak Park in 1905 authorized the village president to appoint a board of health of three physicians. In 1922 this ordinance was amended, and now the Oak Park Board of Health is composed of seven physicians, including the health officer. This arrangement is potentially subject to political change, but the worst feature of the setup is the fact that there is complete domination by the medical profession and no lay representation. The health officer visits the health department five days a week and investigates when necessary the more important communicable diseases. The full-time staff of the health department includes three public health nurses, one of whom is designated and acts as quarantine officer, the second as director of health and education, and the third as school nurse. Only one of the nurses is qualified in accordance with the standards of the N.O.P.H.N. There are four sanitarians, a bacteriologist, and three clerks; one of them acts as registrar and statistician.

Functions.—The major communicable diseases are investigated by the health officer, and the minor ones by the public-health-nurse quarantine officer. Vaccines and serums for immunization against the communicable diseases are purchased by the health department and are free to all physicians in Oak Park. The proportion of preschool children immunized against diphtheria, smallpox, and whooping cough is above the 75 percent ratio considered necessary to avoid epidemic outbreaks of these diseases.

School health services in the public schools are conducted by nurses employed by the school authorities. The health department program in the parochial schools stresses the promotion of positive health and there is excellent teacher participation.

Public health laboratory services are provided by the department for the area under its jurisdiction. Environmental sanitation includes the investigation of nuisance complaints and a rat-elimination program, though the latter was found to be exceedingly crude and totally devoid of modern scientific conceptions of rodent control. The inspection of food establishments is below the accepted standard, although scoring well above the average for the metropolitan area. Public health nurses of seven separate agencies work independently in Oak Park. Co-ordination of their activities is lacking at present and is a major objective.

NEED FOR CO-ORDINATION IN WESTERN SUBURBS

Approximately 200,000 persons live in Cicero, Berwyn, and Oak Park, in the territory west of the city limits of Chicago and east of the Des Plaines River and the forest preserves. Only Berwyn spends more than 50 cents per capita for health services. All have part-time health officers who are paid salaries out of proportion to the services they render. Their sanitarians are neither trained nor provided competent leadership. School health services throughout these communities all differ in content and purpose. An all-inclusive health service, in which all four of these communities would join to form a district health center, located about where Cicero, Berwyn, and Oak Park join, and under the over-all guidance and assistance of the county health department, would enable these communities to acquire the full-time services of personnel with training in public health: health officer, nurses, and sanitarians. Functional activities could thus be co-ordinated, and more health service per health worker could be made available throughout the district. The Berwyn Public Health

District is at present the only health district within the area maintained by a special tax levy, although one other, Stickney, voted in 1946 to assess a special tax levy to support its health services.

COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

In Cook County outside Chicago the most significant development has been the establishment of the Cook County Department of Public Health by resolution of the Board of Commissioners of Cook County in December, 1945. For all except the larger municipalities this action may be considered the first step toward modernized local health administration in Illinois. Health services provided on rural township and small municipality levels have been universally substandard and in many instances practically worthless. The adoption of a full-time health department in Cook County has made it possible for a large portion of the county to receive for the first time a generalized health program.

DEFECTS IN PRESENT PLAN OF ORGANIZATION One of the serious weaknesses of the county health department, however, is the fact that it was set up by resolution of the county commissioners rather than by referendum vote of the people. Had it been established by the latter method, it would have had jurisdiction over the entire county (outside Chicago), whereas its jurisdiction under the existing circumstances is limited to the rural areas and to towns or villages not served by a full-time health unit.

The composition of the county board of health also is open to criticism. The basic state law provides for a board of seven members with overlapping terms, to be appointed by the president of the board of county commissioners and requires that two members shall be physicians and one a dentist. For some reason Cook County preferred to secure an exception to this plan. By a special act of the legislature, the Cook County Board of Health is composed of the entire membership of the Board of Commissioners of Cook County. Regardless of the underlying motives for this action, the plan is fundamentally wrong. Health board members should be selected on the ground of their special fitness for this duty. County commissioners, however, are not as a rule elected to office because of their knowledge of or leadership in matters of public health. The exception made in the case of Cook County, therefore, must be regarded as a change for the worse rather than for the better.

Under the present organization of the Cook County Department

of Public Health, the following personnel are directly responsible to the health officer: administrative assistant and statistician; nutritionist; director of health education; supervisor of nurses; director of school health; epidemiologist; dental health officer; child welfare clinicians (part-time); sanitary engineers.

An organization chart for the health department also shows relationships with local health officers, school boards, and, through the Illinois Department of Public Health, with other state departments and with the United States Public Health Service. The chart indicates liaison relationships with the advisory board of the Cook County Department of Public Health and with the following five voluntary agencies: The Chicago Dental Society (advisory board), the Cook County Friends of Public Health, the American Red Cross, the Tuberculosis Institute of Chicago and Cook County, and the Cook County Chapter of the National Foundation for Infantile Paralysis.

Such an organizational setup works well when a health department is small enough to enable the director to devote time for liaison purposes to official and voluntary agencies having interests in allied health fields, and also to maintain a close personal contact with members of his own staff. Realizing, however, the vast territory and large population, either actually or potentially under the jurisdiction of the Cook County Department of Public Health, a more comprehensive plan of organization has been drawn up, similar to that recommended for Chicago (see Figure 15).

PERSONNEL OF THE HEALTH DEPARTMENT *The director.*—The president of the county board of commissioners appoints the director, who holds office only as long as his services are satisfactory to the county commissioners, who act also as the Cook County Board of Health. To be eligible for appointment, however, the director must be approved by the Illinois Department of Public Health. Other professional personnel of the county health department are selected and appointed by the director, with the approval of the board of health after having met the qualification standards prescribed by the state health department. This method of securing local employees is believed to be significant in that it provides a double check on the qualifications of each employee and is designed to discourage favoritism.

The staff.—Three full-time physicians, 36 public health nurses, 4 sanitary engineers, 2 inspectors (V.D. investigators), 1 health educator, 1 nutritionist, and 11 clerks constitute the staff. All are full-

time employees. Eight part-time pediatricians and five part-time venereal-disease-control clinicians are employed also.

The civil service status of the full-time employees is in a transitional state. The physicians and engineers were formerly civil service employees of the Illinois Department of Public Health, but when the Cook County Department of Public Health was established these men became county employees. They have thus lost their state civil-service status, but are not yet under the county civil-service system. Of the 36 nurses, 7 are on temporary and 29 on permanent civil-service status. The full-time physicians and the sanitary engineers meet the standard qualification requirements. The qualifications of 30 of the 36 nurses meet the standards of the National Organization for Public Health Nursing.

FUNCTIONS OF THE HEALTH DEPARTMENT The health department exercises control over communicable diseases, including tuberculosis and the venereal diseases. Infectious cases of the latter are treated at the Chicago Intensive Treatment Center. Infectious cases of tuberculosis may be hospitalized at the Cook County Hospital, the Cook County Tuberculosis Sanitarium at Oak Forest, or at voluntary sanatoria. Serious cases of diphtheria, scarlet fever, and other contagious diseases are isolated and treated at the contagious unit of the Cook County Hospital. Immunizations against smallpox, diphtheria, and whooping cough are carried on through health programs for infants, preschool children, and school children, except when an outbreak of one of these diseases occurs. At such times, special immunization clinics are organized. Local pediatricians conduct the well-baby, preschool, and immunization clinics. Local physicians also conduct the venereal disease treatment clinics. A full-time physician conducts the school health program for the smaller elementary public schools in the county and for several of the township high schools.

Environmental sanitation, including the supervision of municipal and private water supplies and sewage disposal, is an important function of the department, and is performed with efficiency. The programs of the department do not include inspections of food establishments. In the years prior to the organization of the Cook County Department of Public Health, the Tuberculosis Institute of Chicago and Cook County developed general health services in much of the territory now within the jurisdiction of the county health department and still continues this work. Communicable diseases reported to the county health department by physicians who practice

in the county are still investigated by the Tuberculosis Institute nurses. The official agency will have to depend upon these arrangements until it can acquire additional funds and staff. More formal arrangements, however, should be negotiated between the county health department and the institute so that field service in certain activities, especially in communicable disease control, may become more effective.

NEED FOR INCREASED STAFF AND ADDITIONAL SERVICES There is obvious need for a larger staff and additional services if the Cook County Department of Public Health is to discharge its proper duties. Communicable disease control is the responsibility of the epidemiologist, but the director also spends about one third of his time in the investigation of cases of communicable disease. The territory to be covered extends approximately fifty miles in one direction and thirty miles in another, so that the investigation of a single case may require four hours travel time. Venereal disease treatment centers require closer supervision to prevent their degeneration into mere "filling stations." There must be better case-finding in the investigation of venereal disease contacts. Full-time trained investigators are required. A medical officer specially trained in venereal disease control procedures is urgently needed to organize and direct the venereal disease control program.

The health department must develop a maternal and infant health service. More centers are necessary to enlarge the scope of its pre-school child health service. Some of its public health nurses carry up to thirty schools on their schedule of duties. The school health physician of the department is out in the field throughout the week except for visits to the central office on Wednesday and Saturday mornings. He himself conducts the physical examinations of the school children. He can visit all the schools in the area about once in two years. This physician's time could be spent more suitably in organizing a broad service and directing a program under which part-time physicians conducted the physical examinations.

The public health nursing program of the Cook County Department of Public Health is discussed in Chapter 36. It is appropriate, however, to emphasize in this section the fact that public health nurses are carrying the major county health department load in the field. These nurses must go to headquarters for directions and consultation service which should be available to them in the field from physicians also stationed in the field.

The department has established three district offices in the county in which desks are provided for their public health nurses. Venereal disease clinics also are conducted at two of these district offices. The northern district office cannot be used for conducting clinics, because it is located on a through highway in a country police station remote from any sizable village.

NEED FOR MORE PROFESSIONAL TRAINING OF INSPECTORS

Without exception the inspectors employed in the various Cook County health jurisdictions outside Chicago require additional training, particularly in the fields of milk sanitation, food sanitation, rodent control, and housing. This training would be obtained most satisfactorily in a recognized school of public health. Much improvement, however, could be accomplished by inservice training, which can be arranged for and carried out by qualified engineers from either the Cook County Department of Public Health or the Illinois Department of Public Health.

In contrast to the sanitarians, the nurses employed in the health jurisdictions in Cook County outside Chicago were found to possess the most satisfactory professional qualifications. The sanitary inspectors should be prepared equally well, since these two groups of health department personnel are the ones who come in closest contact with the public. The public receives its major impressions of the health department from them. It is essential, therefore, that both groups should have the professional preparation which will enable them to perform their duties in a way to command public respect and thus advance the prestige of the health department.

Inspectors have had less technical training than any other group of employees of professional or subprofessional status. This statement does not imply that they are in many instances unfit for their jobs, since some of them are doing very creditable work. In general, however, the recognition as a professional group which this class of employees deserve has not been accorded them.¹ As a result, few demands have been made upon them for specialized training. The tendency has been to accept men with intelligence and a minimum

¹The American Public Health Association had been considering the status, from a professional point of view, of the sanitary inspectors, or sanitarians, but had not announced a decision at the time this report was written. The prevailing opinion is that sanitarians should be given recognition as a subprofessional rather than a professional group, since a professional degree in sanitary engineering is not required of them. Professional training within the limits of their restricted field will, however, be expected.

amount of educational qualifications in the sanitary inspection service on the assumption that they are to be trouble shooters for the health department in the abatement of nuisances, acting more or less as law enforcement personnel. In modern health service, however, the duties of an inspector include vastly more than those of a sanitary policeman.

NEED FOR DISTRICT HEALTH CENTERS IN COOK COUNTY

The preceding review of the present organization and activities of the Cook County Department of Public Health leads to the conclusion that, as now constituted, the department is not measuring up to its job and never can do so without considerable expansion and some basic structural changes.

Although Cook County outside Chicago has a population of 667,000 in an area of 727 square miles, its population is scattered compared to that of Chicago. Some sections of the county are as rural as any section in Illinois, even though other areas, mostly residential, are as urban as is much of Chicago.

In a closely-built urban area, a population of 250,000 is generally conceded as the upper limit at which a health department can be administered efficiently from one centralized headquarters. In a less densely populated area, such as Cook County outside Chicago, a lower limit would be required. The fact that the health administration in Cook County is not now under one central jurisdiction does not present a valid argument for continuation of the present system, since the findings of the Chicago-Cook County Health Survey show rather conclusively that no local health jurisdiction in Cook County is providing a complete and well-rounded program. Even such services as are provided are, in many instances, below the desired standards of organization and efficiency. There is reason to believe that even the best of the local health programs would profit by an organic integration with a county-wide system of administration. Such an arrangement could be worked out readily through a district plan covering the entire county exclusive of Chicago.

Naturally a district plan for the county would be governed to a large extent by concentrations of population. Since the county population is more dispersed than that of the city, a smaller unit of population should form the basis for district planning—in this instance 150,000 seems appropriate. If this population unit is taken as a guide, it is estimated that Cook County should have at least five district

TABLE 118. AREA AND POPULATION OF PROPOSED DISTRICT HEALTH CENTERS (COOK COUNTY, EXCLUSIVE OF CHICAGO)^a

| <i>Characteristics</i> | <i>North^b</i> | <i>Northwest^c</i> | <i>Central East^d</i> | <i>Central West^e</i> | <i>South^f</i> |
|---------------------------------------|--------------------------|------------------------------|---------------------------------|---------------------------------|--------------------------|
| Total population | 178,000 | 86,900 | 281,100 | 203,087 | 208,300 |
| Urban population | 173,000 | 61,900 | 273,300 | 173,256 | 179,800 |
| Rural population | 4,100 | 25,000 | 2,800 | 29,831 | 28,500 |
| Total area (square miles) | 80.5 | 222.5 | 32.5 | 147.5 | 217.25 |
| Urban area (square miles) | 47.5 | 24.0 | 29.2 | 50.6 | 97.00 |
| Rural area (square miles) | 33.0 | 198.5 | 3.3 | 96.9 | 120.25 |
| No. of incorporated municipalities | 12.0 | 9.0 | 10.0 | 19.0 | 41.00 |
| Maximum north-south distance | 11.0 | 11.0 | 14.0 | 24.0 | 18.00 |
| Maximum east-west distance | 9.0 | 23.0 | 4.0 | 6.0 | 20.00 |

^a Population figures in the table are based on the estimated population for 1965.

^b North of Chicago and east of Forest Preserve.

^c West of Forest Preserve and north of an extension of Devon Ave.

^d West of Chicago city limits and east of Des Plaines River and Forest Preserve.

^e West of DePlaines River to county line.

^f South of Chicago and east of the Wabash Railroad.

health centers and five or more subcenters. The division into districts suggested as a practical working basis, presented in Table 118, is on the assumption that the existing local health jurisdictions by common consent or otherwise, will join the county-wide plan.

ADVANTAGES OF DISTRICTING Administration of health department services through districts would bring about a more diversified coverage of health problems by making available on a county-wide basis certain specialized services which individual units scarcely could maintain separately. Administration by districts also would result in a more mobile service, thus enabling the director in cases of emergency to concentrate forces upon the most urgent objectives.

NEED FOR UNIFORM TAX LEVY At the present time the county has one system of financing health services, and each municipality has a separate or different one of its own. A logical procedure would be to set up a uniform tax levy for health purposes, applicable to the entire county outside Chicago, in order to provide the minimum health requirements on a county-wide basis. The more wealthy communities might then devote extra funds to securing additional services over and above the minimum needs.

Service under a district plan should, of course, be better than the best now being rendered in any local community, as otherwise the

only object in making a change would be the possibility of getting the job done at less expense.

ORGANIZATION OF DISTRICT OFFICES The organization of each district office would be identical with that of the central office, with the exception of certain common services which would be maintained only at the central headquarters, but would be available to all districts. These services would include the following: laboratory, statistics, budgetary and accounting, engineering, nutrition, and health education, including visual equipment and other material. The directors of the district units would obtain consultant and advisory services also from the various other divisions of the county health department located at the central office.

Each district director would have complete responsibility for his unit under the general supervision of the director of the county health department, who would co-ordinate all work. This administrative setup is similar to that proposed for the Chicago Health Department described later in this chapter.

PERSONNEL REQUIREMENTS

To make the proposed program for the Cook County Department of Public Health effective, an adequate staff of properly-trained personnel is essential. The requirements of the department have been studied from various points of view: the judgment of the survey group, based on observations of actual needs and conditions; the recommendations of the foremost authorities in public health practice, which were used to supplement and corroborate the survey group's conclusions; the findings of a study of 242 cities made in 1943-44 by the American Public Health Association; and the ratios of public health workers to population.

Table 119 presents a comparison of the ratios used for selected groups of the personnel proposed for the Cook County Department of Public Health with the median, upper, and lower quartile ratios calculated for the full-time health departments studied in the American Public Health Association's survey of 242 cities. This comparison indicates that the ratios proposed for the Cook County personnel are within reasonable limits, since they fall between the lower and the median quartiles shown for these cities.

Table 120 classifies the personnel required for the central and district offices proposed for the Cook County Department of Public Health according to type of service. Tables 121 and 122 present a

TABLE 119. POPULATION RATIOS OF SELECTED GROUPS OF PERSONNEL PROPOSED FOR COOK COUNTY DEPARTMENT OF PUBLIC HEALTH COMPARED WITH PERSONNEL-POPULATION RATIOS CALCULATED FOR EXISTING FULL-TIME HEALTH DEPARTMENTS

| SELECTED GROUPS OF PERSONNEL | COOK COUNTY (PROPOSED) | | COMPARATIVE CALCULATIONS FOR OTHER EXISTING FULL-TIME HEALTH DEPARTMENTS ^a | | | | | | | RANGE | |
|---|------------------------|----------------------------|---|-----------------------|--------|------------------------------|----------------|------------------------------------|-------------------------------------|---------|---------|
| | Total Number | Population (1960 estimate) | Population (In 1000's per unit personnel) | Departments Reporting | Median | Upper Quartile | Lower Quartile | Median (Com-munities over 100,000) | Median (Com-munities under 100,000) | Minimum | Maximum |
| | | | | | | | | | | | |
| Health officers (medical) | 16 | 957,387 | 59.84 ^b | 242 | 43.8 | 28.3 | 77.5 | 100.0 | 37.6 | 11.3 | 652.5 |
| Public health nurses | 109 | 957,387 | 8.78 ^c | 242 | 10.8 | 7.4 | 15.6 | 12.7 | 10.4 | 2.3 | 91.0 |
| Sanitary engineers and sanitarians (combined) | 50 | 957,387 | 19.15 ^d | 242 | 24.2 | 16.7 | 34.9 | 19.2 | 25.0 | 3.1 | 289.0 |
| Clerical personnel | 70 | 957,387 | 13.67 ^e | 242 | 18.6 | 13.4 | 29.8 | 16.0 | 19.0 | 3.1 | 118.6 |
| Public health dentists | 6 | 957,387 | 159.56 | | | No comparable data available | | | | | |
| Public health educators | 6 | 957,387 | 159.56 | | | No comparable data available | | | | | |
| Public health nutritionists | 6 | 957,387 | 159.56 | | | No comparable data available | | | | | |

^a American Public Health Association, *Health Practice Indices 1943-44*, New York, 1945.

^b Compared to the 242 other health departments, approximately 150 departments have more health officers per population unit than the figures proposed for Cook County.

^c Compared to the 242 other health departments, approximately 100 departments have more nurses per population unit than the figure proposed for Cook County.

^d Compared to the other 242 health departments, approximately 80 departments have more sanitation personnel per population unit than the figure proposed for Cook County.

^e Compared to the 242 other health departments approximately 60 departments have more clerical assistants per population unit than the figure proposed for Cook County.

TABLE 120. PERSONNEL FOR CENTRAL AND DISTRICT OFFICES OF
PROPOSED COOK COUNTY DEPARTMENT OF PUBLIC HEALTH
CLASSIFIED BY TYPE OF SERVICE AND NUMBER

| LOCATION | CLASSIFICATION (ITEM AND NUMBER) | | | | | | | | | | | | |
|-----------------------------------|----------------------------------|------------------------|---------------------|-------------------|------------|-----------------------|-----------------|--------------|----------------|----------|-----------------------|--------------------|---|
| | TOTAL | Health Officer—Medical | Public Health Nurse | Sanitary Engineer | Sanitarian | Public Health Dentist | Health Educator | Nutritionist | Administrative | Clerical | Maintenance and Misc. | Clinic Technicians | Part-Time Clinicians (not included in total) |
| Central Administrative Office | 44 | 8 | 6 | 4 | .. | 1 | 1 | 1 | 3 | 12 | 6 | 2 | 32 ^a |
| North District | 41 | 1 | 16 | 1 | 7 | 1 | 1 | 1 | .. | 10 | 1 | 2 | |
| Northwest District | 27 | 1 | 11 | 1 | 3 | 1 | 1 | 1 | .. | 5 | 1 | 2 | |
| Central East District | 58 | 1 | 24 | 1 | 11 | 1 | 1 | 1 | .. | 15 | 1 | 2 | |
| Central West District | | | | | | | | | | | | | |
| Sub-center (Brookfield Area) | 53 | 2 | 22 | 1 | 9 | 1 | 1 | 1 | .. | 13 | 1 | 2 | |
| South District | 66 | 3 | 30 | 2 | 10 | 1 | 1 | 1 | .. | 15 | 1 | 2 | |
| Subcenter (Oaklawn Area) | | | | | | | | | | | | | |
| Subcenter (Robbins Area) | | | | | | | | | | | | | |
| Sub-center (Chicago Heights Area) | | | | | | | | | | | | | |
| Subcenter (Lansing Area) | | | | | | | | | | | | | |
| Total | 289 | 16 | 109 | 10 | 40 | 6 | 6 | 6 | 3 | 70 | 11 | 12 | 32 |

^a Part-Time Clinicians: 11 for school health clinics; 16 for maternal and child health clinics; 5 for geriatric clinics, or equivalent number to provide for 6,725 clinic sessions per year.

further analysis by type of service and position for personnel in the central and district offices.

ESTIMATED BUDGET REQUIREMENTS

The minimum total budget proposed for the Cook County Department of Public Health is \$1,136,775, and the maximum \$1,311,995. Table 123 presents an analysis of the proposed minimum and maximum budgets, showing the total salary requirements for each type of service, the total amounts budgeted for rent, equipment, travel, and other expenses, and the percentage of the total budgets allotted to each classification. The last two columns in the table give the number and percentage of personnel by types of service. The last line in the table gives the amount budgeted for supervisory salaries

TABLE 121. NUMBER OF PERSONNEL BY TYPE OF SERVICE AND POSITION, RECOMMENDED FOR THE CENTRAL ADMINISTRATIVE OFFICE PROPOSED FOR THE COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

| <i>Type of Service and Description of Position</i> | <i>Total Number Required</i> |
|---|------------------------------|
| Health Officers (Medical) | 8 |
| Director of Health Department | 1 |
| Deputy Director in charge of medical services | 1 |
| Chief, Division of Communicable Diseases | 1 |
| Chief, Division of Child and Adult Hygiene | 1 |
| Assistant Chief, Division of Communicable Diseases; T.B. Section | 1 |
| Assistant Chief, Division of Communicable Diseases; V.D. Section | 1 |
| Assistant Chief, Division of Child and Adult Hygiene; | |
| Pediatrics Section | 1 |
| Assistant Chief, Division of Child and Adult Hygiene; | |
| Geriatric Section | 1 |
| Public Health Nurses | 6 |
| Chief, Division Public Health Nursing | 1 |
| Assistant Chief, Division Public Health Nursing | 1 |
| Public Health Nursing Consultants | 4 |
| Sanitary Engineers | 4 |
| Deputy Director in charge of engineering services | 1 |
| Chief, Division Municipal Sanitation | 1 |
| Chief, Division of Milk and Foods | 1 |
| Chief, Division Community Sanitation | 1 |
| Public Health Dentist | 1 |
| Chief, Division of Public Health Dentistry | 1 |
| Public Health Educator | 1 |
| Chief, Division of Public Health Education | 1 |
| Nutritionist | 1 |
| Chief, Division of Nutrition | 1 |
| Administrative personnel | 3 |
| Administrative assistant | 1 |
| Chief Clerk | 1 |
| Statistician | 1 |
| Clerical workers | 12 |
| Senior stenographer | 1 |
| Stenographers | 11 |
| Laboratory Technicians | 2 |
| For X-raying, blood-testing, urinalysis, and other procedures | 2 |
| Maintenance and Miscellaneous Workers | 6 |
| Janitor, messenger, truck driver, motion picture operator, others | 6 |
| Part-time clinicians (not included in total above) | 32 ^a |
| School health clinics | 11 |
| Maternal and child health clinics | 16 |
| Geriatric clinics | 5 |
| All types | 44 |

^a Or equivalent number to provide 6,725 clinic sessions per year.

TABLE 122. NUMBER OF PERSONNEL, BY TYPE OF SERVICE AND POSITION, RECOMMENDED FOR THE PROPOSED DISTRICT HEALTH CENTERS OF THE COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

| TYPE OF SERVICE AND POSITION | DISTRICTS | | | | |
|--|--------------|------------------|---------------------|---------------------|--------------|
| | <i>North</i> | <i>Northwest</i> | <i>Central East</i> | <i>Central West</i> | <i>South</i> |
| Health Officers (medical) | | | | | |
| District Director | 1 | 1 | 1 | 2 | 3 |
| Public Health Nurses | 16 | 11 | 24 | 22 | 30 |
| District Public Health Nurse | 1 | 1 | 1 | 1 | 1 |
| Assistant Dist. Public Health Nurse | 1 | 1 | 1 | 1 | 1 |
| Staff (1 per 12,700 pop.) | 14 | 9 | 22 | 20 | 28 |
| Sanitary Engineers | 1 | 1 | 1 | 1 | 2 |
| Dist. Sanitary Engineer | 1 | 1 | 1 | 1 | 1 |
| Assistant District Sanitary Engineer | | | | | 1 |
| Sanitarians | 7 | 3 | 11 | 9 | 10 |
| Senior Sanitarian | 1 | 1 | 1 | 1 | 1 |
| Sanitarians (1 per 25,000 pop.) | 6 | 2 | 10 | *8 | 9 |
| Public Health Dentist | | | | | |
| District Public Health Dentist | 1 | 1 | 1 | 1 | 1 |
| Public Health Educator | | | | | |
| District Public Health Educator | 1 | 1 | 1 | 1 | 1 |
| Nutritionist | | | | | |
| District Nutritionist | 1 | 1 | 1 | 1 | 1 |
| Clerical | 10 | 5 | 15 | 13 | 15 |
| Senior Stenographer | 1 | 1 | 1 | 1 | 1 |
| Stenographers | 9 | 4 | 14 | 12 | 14 |
| Laboratory Technicians | | | | | |
| For X-raying, seriological service, and urinalysis | 2 | 2 | 2 | 2 | 2 |
| Maintenance & Miscellaneous | | | | | |
| Janitor | 1 | 1 | 1 | 1 | 1 |
| All types | 41 | 27 | 58 | 53 | 66 |

and the number and percentage of the personnel who belong in this group.

The allocations for the salaries of full-time personnel to be assigned to the central office and to each of the five district health centers in the suggested budgets are as follows:

| | <i>Minimum</i> | <i>Maximum</i> |
|----------------|----------------|----------------|
| Central office | \$155,540 | \$189,920 |
| South district | 169,800 | 207,720 |
| Central-east | 145,500 | 177,720 |
| Central-west | 135,660 | 165,920 |
| North | 105,700 | 129,320 |
| Northwest | 73,700 | 90,520 |

Table 124 presents the number of part-time clinicians required for school, maternal and child health, and geriatric services, together with the amounts budgeted for each group.

TABLE 123. MINIMUM AND MAXIMUM BUDGETS PROPOSED FOR COUNTY DEPARTMENT OF PUBLIC HEALTH ANALYZED BY AMOUNT AND PERCENTAGE OF TOTAL BUDGET FOR EACH MAJOR EXPENSE CLASSIFICATION AND BY NUMBER AND PERCENTAGE OF EMPLOYEES IN EACH EXPENSE CLASSIFICATION

| CLASSIFICATION OF EXPENSE ITEMS | PROPOSED BUDGETS | | PERSONNEL | |
|---|------------------|-------------|-----------------|------------|
| | MINIMUM | MAXIMUM | Number | Percentage |
| Salaries | Amount | Amount | Number | Percentage |
| Medical services (total) | \$886,775 | 1,061,995 | ... | ... |
| Health officers (medical) | 223,075 | 248,875 | ... | ... |
| Clinicians (full and part-time) | 86,200 | 104,800 | 28 ^a | 9.7 |
| Nursing | 136,875 | 144,075 | ... | ... |
| Engineering & sanitation | 296,700 | 364,400 | 109 | 37.7 |
| Administration | 152,500 | 187,900 | 50 | 17.3 |
| Dentistry | 147,500 | 178,320 | 84 | 29.0 |
| Health education | 26,000 | 32,500 | 6 | 2.1 |
| Nutrition | 20,500 | 25,000 | 6 | 2.1 |
| Other expense classifications | 20,500 | 25,000 | 6 | 2.1 |
| Rent, maintenance, supplies, equipment, and miscellaneous | 250,000 | 250,000 | ... | ... |
| Travel | 100,000 | 100,000 | ... | ... |
| Salaries for supervisory personnel (included above) | 150,000 | 150,000 | ... | ... |
| All items | 178,600 | 219,000 | 38 | 13.1 |
| | \$1,136,775 | \$1,311,995 | 289 | 100.0 |

^a The number of part-time clinicians is not included in this figure.

TABLE 124. BUDGET REQUIREMENTS FOR PAYMENTS TO PART-TIME CLINICIANS BY TYPE OF SERVICE (FOR PROPOSED COOK COUNTY DEPARTMENT OF PUBLIC HEALTH)

| <i>Types of Service</i> | <i>Number of Part-time Clinicians</i> | <i>Proposed Budget</i> |
|------------------------------------|---|----------------------------|
| School services | | |
| 2,475 clinic sessions | 11 | \$37,125 |
| Maternal and child health services | | |
| 4,000 clinic sessions ^b | 16 | 60,000 |
| Geriatric services | | |
| 250 clinic sessions ^b | 5 | 3,750 |
| Total | 32 ^a | \$100,875 |

^a Or equivalent number to provide 6,725 clinic sessions.

^b Each clinic session lasts three hours and is paid for at the rate of \$15 per session

Table 125 presents for each type of full-time position in the central and district offices the number of personnel, the minimum and maximum salary rates, and the total budget proposed.

RECOMMENDATIONS

It is recommended that:

1. Health departments of the municipalities outside Chicago maintaining full-time health services shall join the Cook County Department of Public Health.

2. There shall be developed eventually in Cook County, outside Chicago, five district health units of the county health department.

3. The existing full-time health units shall be utilized insofar as possible as the centers for the district health units of the Cook County Department of Public Health and that the full-time health officers and their staffs shall become the nuclei of the district health organizations.

4. The development of a district plan of organization shall be so regulated that the proposed southern and northwestern districts shall be completed and in operation by 1948 and that the others shall be planned for operation by 1950.

5. There shall be established by resolution of the Board of Commissioners of Cook County a board of health consisting of at least seven members and that the members of the board thus created shall be selected to represent various aspects and interests of public health with special reference to knowledge of and leadership in activities in this field.

6. The following types of service shall be established or strengthened:

(a) Preventive medical services, such as communicable disease control, maternal and child hygiene, geriatrics, public health nursing, and nutrition.

(b) Sanitary engineering services, such as municipal sanitation, community sanitation, and milk and food control.

(c) Central administrative services, including health education and statistics and research.

7. Advantage shall be taken of the sections in the state law (Searcy-Clabaugh) which permit a county by referendum vote to levy a tax not to exceed one mill per dollar of its assessed valuation for the purpose of establishing and maintaining a county department of health. Funds for the support of the Cook County Department of Public Health, including the proposed district health centers, could be raised by this method, with the understanding that the amounts collected in the city of Chicago would revert to that city for maintenance of its health services.

8. Additional local municipal resources shall be used when desired to furnish local health services over and above the minimum provided through and in co-operation with the Cook County Department of Public Health.

CHICAGO HEALTH DEPARTMENT

The difficulties which beset interested citizens of Chicago in their early attempts to set up organized health services have been described in earlier chapters. An official department of health was established finally in 1876, after the passage of the Illinois Cities and Villages Act. Chicago then had a population of 406,661, yet the funds provided for general health work amounted to only \$36,640, out of a total budget of \$62,016. Of the remaining funds, \$17,000 was allocated to scavenger work, and \$6,375 for the removal of dead animals. The 1946 budget, while infinitely larger, is still inadequate, as the discussion in the following pages reveals.

PRESENT ORGANIZATION The health department is the executive agency of the board of health, which consists of two physicians and one layman appointed by the mayor. One of the two physicians on this board is designated "President of the Board." The board has no specified tenure of office. Created by the mayor, it owes its exist-

TABLE 125. FULL-TIME PERSONNEL BY TYPE OF POSITION, NUMBER, AND MINIMUM AND MAXIMUM SALARIES BUDGETED FOR PROPOSED COOK COUNTY DEPARTMENT OF PUBLIC HEALTH

| TYPES OF POSITIONS | NUMBER OF PERSONNEL | FULL-TIME SALARIES BUDGET | | | |
|---|---------------------|---------------------------|----------|--------------|-----------|
| | | ANNUAL RATE | | TOTAL AMOUNT | |
| | | Minimum | Maximum | Minimum | Maximum |
| Central Office | | | | | |
| Director Health Department | 1 | ... | ... | \$155,540 | \$189,920 |
| Deputy directors | 2 | \$10,000 | \$10,000 | 10,000 | 10,000 |
| | | 7,200 | 9,000 | 14,400 | 18,000 |
| Division chiefs | | | | | |
| Communicable diseases, child and adult hygiene, public health dentistry, municipal sanitation | 4 | 6,000 | 7,500 | 24,000 | 30,000 |
| Public health nursing, milk and food, community sanitation | 3 | 5,000 | 6,200 | 15,000 | 18,600 |
| Health education; nutrition | 2 | 4,000 | 5,000 | 8,000 | 10,000 |
| Assistant division chiefs | | | | | |
| Tuberculosis, venereal disease, pediatric, and geriatric sections | 4 | 5,000 | 6,200 | 20,000 | 24,800 |
| Public health nursing | 1 | 4,000 | 5,000 | 4,000 | 5,000 |
| Public health nursing consultants | 4 | 3,600 | 4,000 | 14,400 | 16,000 |
| Administrative assistant | 1 | 4,000 | 5,000 | 4,000 | 5,000 |
| Chief clerk | 1 | 3,300 | 4,000 | 3,300 | 4,000 |
| Statistician | 1 | 3,600 | 4,400 | 3,600 | 4,400 |

| | | | | | |
|---|-----|-----|---------|-----------|-----------|
| District offices (5) | | | | | |
| Director, District Health Center | 5 | ... | \$6,200 | \$630,360 | \$771,200 |
| Assistant directors | | | | 25,000 | 31,000 |
| Central-West District (1) | | | | | |
| South District (2) | 3 | | 5,000 | 12,000 | 15,000 |
| District public health nurses | 5 | | 4,000 | 16,500 | 20,000 |
| Assistant district public health nurses | 5 | | 3,600 | 15,000 | 18,000 |
| Staff public health nurses | 93 | | 3,200 | 241,800 | 297,600 |
| District sanitary engineers | 5 | | 5,000 | 20,000 | 25,000 |
| Assistant district sanitary engineer | | | | | |
| South District only | 1 | | 4,000 | 3,300 | 4,000 |
| Senior sanitarian | 5 | | 3,600 | 15,000 | 18,000 |
| Sanitarian | 35 | | 3,200 | 91,000 | 112,000 |
| District public health dentists | 5 | | 5,000 | 20,000 | 25,000 |
| District public health educators | 5 | | 4,000 | 16,500 | 20,000 |
| District nutritionists | 5 | | 4,000 | 16,500 | 20,000 |
| Central and district offices | | | | | |
| Senior stenographers | 6 | | 3,000 | 12,000 | 18,000 |
| Stenographers | 64 | | 2,000 | 110,080 | 128,000 |
| Laboratory technicians | 12 | | 3,600 | 36,000 | 43,000 |
| Maintenance, drivers, messengers and others | 11 | | 1,720 | 14,520 | 18,920 |
| All Types | 289 | | ... | \$785,900 | \$961,120 |

ence entirely to him. This arrangement is outmoded and contrary to present-day standards of good practice. Modern health authorities generally agree that a wider representation of interests is needed than can be secured through a three-member board, especially when two of the three are physicians. Adequate representation of the medical profession on a board of health is, of course, essential, but strong lay representation is highly desirable. The lay members should represent civic groups such as the schools, women, labor, commerce, and social agencies.

A board with discretionary and policy-forming powers cannot perform its functions satisfactorily in a great city such as Chicago with a membership of less than seven. Moreover, the tenure of existence of this board should not be dependent wholly upon the chief executive of the city. Continuity may be accomplished at least to some degree by the passage of a city ordinance specifying a six-year term of office with staggered expiration dates. The ordinance should provide also that board members be appointed by the mayor from a list of three eligibles for each position, submitted by responsible professional and civic organizations. The mayor's appointments would be subject to approval by the city council. The present arrangement under which the executive officer of the health department is a member of the board under which he serves is basically unsound.

The Chicago Board of Health has been looked upon generally as a one-man affair, which in functional reality it is. In the presence of existing circumstances, something may be said in favor of this situation, provided that man is a sincere and dynamic leader with a free hand in the management of the health program. These conditions appear to have been met in the present instance, but the odds are strongly against such a favorable combination of circumstances. Even in this instance the insidious hand of political patronage and other obnoxious forms of political pressure tax the utmost ingenuity of the board president to keep these influences under subjection. A less powerful personality would be utterly overwhelmed at all times. Finally, no matter how much personal strength the executive officer may possess, if he is loyal and consistent he must, of necessity, defer to the wishes of his chief. The end result is that any health department that is constituted as is Chicago's is inevitably the victim of inherent weakness which places an unnecessary burden upon the officer in charge.

METHODS OF APPOINTING PERSONNEL The method of appoint-

ing the commissioner has been described. This position is not under civil service. No qualification requirements have been established for it, and the tenure of office is entirely at the pleasure of the appointing authority.

Subordinate personnel are presumed to be under civil service, but the survey reveals a wide deviation from this principle (see Chapter 40). No job specifications are set up for a large portion of the professional personnel. Such specifications as do exist are not in accordance with the qualification requirements prescribed by the Conference of State and Territorial Health Officers.

PERSONNEL BY TYPE OF POSITION, NUMBER, AND QUALIFICATIONS

Physicians.—The health department employs a total of 195 physicians, 23 on a full-time and 172 on a part-time basis. The full-time physicians have had, on the average, 5.23 years of experience, and the part-time men, 13.81 years. Among the full-time group, only two had degrees in public health, that is, are technically trained in public health in accordance with recognized standards. Three others have had some graduate study in public health. None of the 172 physicians in the part-time group had a degree in public health; 22 had taken some graduate study. The following tabulation indicates the number in each group who had certain other qualifications.

| | Full time | Part time |
|--|-----------|-----------|
| Diplomates of boards of medical specialties | 3 | 16 |
| Authors of professional articles in medical journals | 5 | 25 |
| Authors of books | 0 | 4 |

Eighteen full-time men and 135 part-time men subscribed to professional journals.

Sanitary engineers.—Although the department has no sanitary engineering division, a sanitary engineer of recognized professional standing serves as the assistant to the president of the board, and an engineer with a degree in public health acts as chief of the Country Dairy Inspection Section.

Food and dairy inspectors.—The Food Sanitation Section has a staff of thirty-six inspectors, including the section chief. The Milk Control Section has a total inspection force of sixty-four, including the director. The work of this section is carried on by two subsections, Country Dairy Inspection and City Dairy Inspection, with the following personnel:

| <i>Country Dairy Inspection</i> | | <i>City Dairy Inspection</i> | |
|-------------------------------------|----|------------------------------|----|
| Section chief | 1 | Section chief | 1 |
| Supervisors | 3 | Supervisors | 3 |
| Dairy inspectors | 35 | Plant inspectors | 11 |
| Inspectors at receiving stations | 3 | Sample inspectors | 2 |
| Sample collectors | 4 | | 17 |
| — | | | |
| 46 | | | |

The chief of the Country Dairy Inspection Service, referred to in the paragraph on sanitary engineers, has a degree in public health. Although the director of the Division of Foods and Milk and the chief of the Food Sanitation Section have had no technical training in public health, their basic training and experience are considered to qualify them acceptably for their duties (see discussion on page 953).

Public health nurses.—Of the 217 nurses employed by the health department, 18 staff nurses and 2 supervisors have technical qualifications entitling them to recognition by the National Organization for Public Health Nursing.

Laboratory personnel.—This division of service employs 75 technical personnel, all of whom are considered to have the qualifications requisite for their respective duties. Among the 32 bacteriologists, serologists, and chemists are the director with a degree of D.V.M., 4 with the degree of M.D., 22 with B.A. or B.S., and 5 who completed high school and have taken further courses of study, but have no degrees. Of the 43 laboratory assistants, 12 had college degrees, 23 had training in excess of high school but no degree, 8 had high school training only (see also Chapter 21).

HEALTH DEPARTMENT FUNCTIONS It was pointed out at the beginning of this chapter that the Chicago Health Department does not include all those functions considered normal health department activities. It operates no preschool or school medical services except for the control of communicable diseases; the Glackin Act transferred the management of tuberculosis control to the Municipal Tuberculosis Sanitarium; community sanitation has been transferred to the Bureau of Housing; the personnel who formerly handled industrial hygiene activities has been transferred to the Department of Building; there is no formal nutrition program. Some of the

activities which the department does carry rate low in the performance scale, for example: epidemiology, certain phases of public health nursing, sanitation of food-handling places, and the recording and processing of statistical data.

The Chicago Health Department should address itself first to the task of strengthening the weak spots in its existing program and should next proceed to restore or initiate the missing functions. Although in order of importance the second task might come first, it is given a subordinate position here, since at the present time the department lacks the authority to bring some of these missing functions under its jurisdiction.

PROPOSED REVISIONS OF ORGANIZATION AND FUNCTIONS

This survey has undertaken the task of attempting to furnish health agencies with what is comparable to an engineering blue print for immediate and future development. There is, however, a notable difference between a builder's blue print and the program that will be proposed for the guidance of the development of health services in this area. In the former the directions must be followed in minutest detail, whereas the pattern laid out for a health structure as large as that of the city of Chicago, necessarily must have a certain amount of flexibility. The bases for such a plan are derived from what is known to be standard practice, the experience with successful health programs elsewhere, and professional judgment relative to needs and conditions found in this community. In developing plans for Chicago, care has been taken to avoid the visionary and to specify only those items considered practical and within reasonable limits. It is expected that the details as to exact number of personnel and salary ranges may be subject to adjustments, but the basic principles of the plan are believed to be a reliable and essential guide.

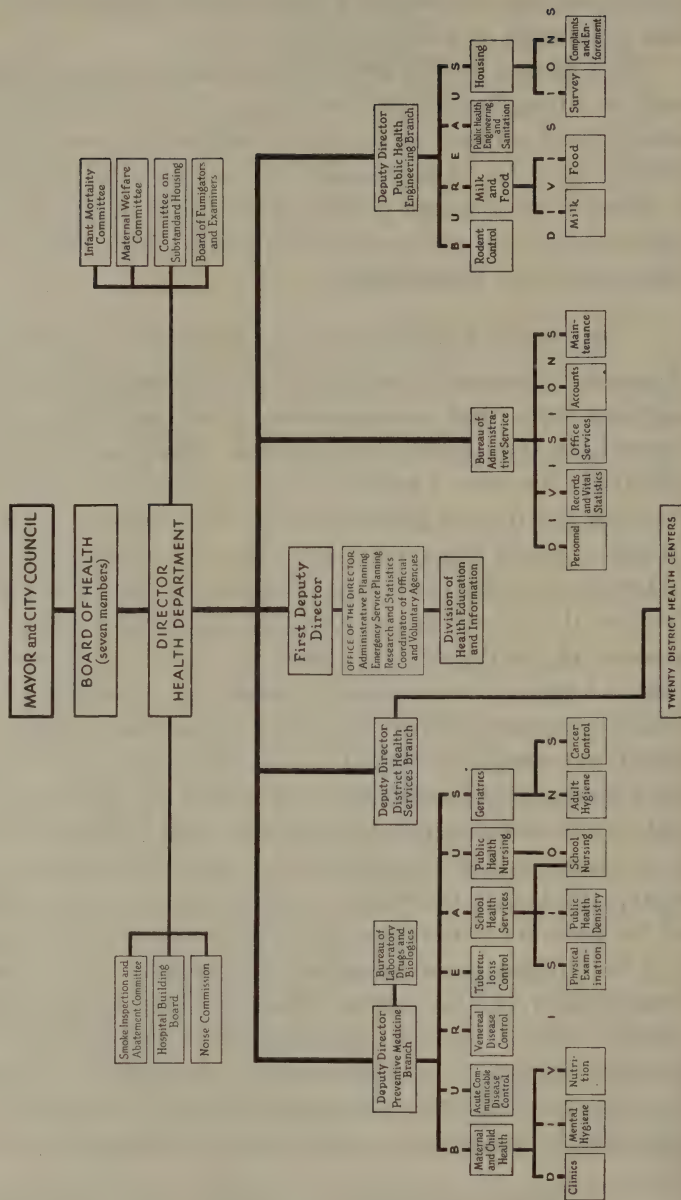
The reorganization program is presented in two stages: (1) reorganization of the central administration along lines considered essential for the present and immediate future and (2) a plan for decentralization to be undertaken as promptly as arrangements can be made to implement this policy. Figure 15 depicts a chart of the proposed reorganization of the central administration.

REORGANIZATION OF CENTRAL ADMINISTRATION

As in the present organization, the over-all governing authorities are the mayor and the city council. An expanded board of health, with a

FIGURE XV

ORGANIZATION of the CENTRALIZED CHICAGO HEALTH DEPARTMENT (Proposed)



minimum of seven members, appointed by the mayor and approved by the city council, will be responsible for plans, policies, rules and regulations, and appeals. This board will employ an executive director whose responsibility it will be to organize and direct all operating functions under the board's jurisdiction. The executive director may be designated as the "commissioner," the "health officer," or by any other desired title. He and all the personnel under him will constitute the health department. For the sake of brevity, this executive officer will be referred to in the discussion of the organization chart in Figure 15 as the "director."

The organization chart shows four deputy directors, one of whom is designated as "first deputy director." The three other deputy directors will be in charge of three newly created branches: Preventive Medicine, Public Health Engineering, and District Health Services. This third position would not be filled until the adoption of a decentralized program. If and when the health department undertakes the supervision of medical care, a Medical Care branch would be established, having a fifth deputy director in charge.

Bureaus will be created in each branch, and divisions and sections organized in each bureau as needed. "Branch" and "bureau" are two new classifications not found in the present organization of the health department. Their introduction will broaden enormously the base of the organizational structure and will bring the organization of the health department more closely into line with that of other departments of the city government. The two higher classifications are essential not only to provide for a more extensive graduation of authority and responsibility but also to introduce higher salary scales, which are imperative in order to attract the kind of talent the service must have if success is to be expected. While there are no regulations fixing salaries in accordance with job levels, it is generally recognized that salary scales run in ascending order from the position as chief of section, division, bureau, branch, and department. Later in this discussion specific salary ranges for each level will be proposed.

THE EXECUTIVE DIRECTOR While most of the functions of the director are executive, he acts also in an advisory and consultant capacity to other official agencies in the city. On the chart in Figure 15 these responsibilities are indicated by lines running horizontally from each side of the block representing the director. He would be related in this capacity to the following groups: Smoke Inspection and Abatement Committee, Hospital Building Board, Noise Com-

mission, Infant Mortality Committee, Maternal Welfare Committee, Committee on Substandard Housing, and Board of Fumigation and Housing.

OFFICE OF THE DIRECTOR The first deputy director would be in administrative charge of the director's office. His primary duty would be to act as the director in the latter's absence. The director also would delegate to the first deputy director responsibility for direct supervision of the following functions, which affect all phases of the field administration program, but do not require field units: administrative planning, emergency service planning, research and statistics, and co-ordination of official and voluntary agencies. These functions are grouped on the chart under the heading "Office of the Director." Only one, emergency service planning, is believed to need clarification.

Emergency service planning.—It is proposed that an emergency service planning program be organized in Chicago to develop an over-all service ready to spring into action whenever there is a disaster of such magnitude that it cannot be handled by the Red Cross, the police department, and the ordinary facilities of hospitals, clinics, and mortuary parlors. War experience in England, Germany, and Japan demonstrated the need for a comprehensive program of civilian emergency services under centralized co-ordination and control. The injuries and loss of life which resulted from the "Coconut Grove" fire in Boston illustrate clearly that major disasters may occur in times of peace as well as during periods of war.

Each of the larger hospitals should be invited to take part in this emergency service program by designating one or more mobile medical teams of doctors and nurses and by keeping ready for their immediate use a well-selected kit of first-aid supplies and means of transportation. These teams should be alerted not infrequently and drilled in their respective duties. The health department would assume responsibility for the central direction of this emergency planning service and would designate the first deputy director as the health department official whose duty it would be (1) to keep these emergency forces groomed for immediate action at all times and (2) to maintain complete liaison with all other emergency forces both voluntary and official. With these objectives in view, an emergency service has been included in the organizational setup.

DIVISION OF HEALTH EDUCATION AND INFORMATION The next function indicated on the chart in Figure 15 is Health Education and

Information. This function is attached to the office of the director because it is concerned with all phases of the health program. It is given a divisional status and separated from the other functions in the director's office because it has a field operating program.

BUREAU OF ADMINISTRATIVE SERVICE Although Administrative Service is designated on the chart as a bureau rather than a branch, the chief of this bureau will be under the direct supervision of the director. He will, therefore, be a member of the director's cabinet along with the deputy directors. The Bureau of Administrative Service will have four divisions: (1) personnel, (2) records and vital statistics, (3) office services, (4) accounts and maintenance. On the whole, the titles of these four divisions are self explanatory. The functions of the Personnel Division, however, have implications beyond those implied in the title. This division would not be concerned with the selection and appointment of technical personnel. The chief under whom a new employee was to work would make the selection, subject to approval by the director. The director would make the actual appointment.

The chief of the Personnel Division would engage in the recruitment of technical personnel only upon request from the chief of a particular service. He would, however, be responsible for the recruitment and selection of clerical personnel for appointment by the director and for placement in sections, bureaus, or branches. He would also assist the chief of any technical subdivision in arranging for in-service training.

PREVENTIVE MEDICINE BRANCH This division of service is the most important one in a centralized organization such as that of the present Chicago Health Department. Under a decentralized plan of organization, however, responsibility for operation of the major field functions is transferred to the deputy in charge of district health services.

It was somewhat difficult to place the *Bureau of Laboratories, Drugs, and Biologics* in the organization chart, because it provides both clinical laboratory services for the Preventive Medicine Branch and examination of water, milk, food, and sewage for the various bureaus and divisions in the Public Health Engineering Branch. However, since these sanitary laboratory procedures are all in the interest of disease prevention, placing of the Bureau of Laboratories, Drugs, and Biologics under the Preventive Medicine Branch is not inappropriate. This bureau is attached directly to the office of the

deputy director of the Preventive Medicine Branch because all the bureaus utilize its services.

The Preventive Medicine Branch would be subdivided into seven other bureaus: (1) Acute Communicable Disease Control, (2) Venereal Disease Control, (3) Tuberculosis Control, (4) School Health Services, (5) Public Health Nursing, (6) Maternal and Child Health Services, and (7) Geriatrics. Venereal disease control and tuberculosis control are each set up as separate bureaus and are not under the Bureau of Communicable Disease Control for the following reasons. The Bureau of Venereal Disease Control has a very large field program, including the management of a two-hundred-bed hospital. A separate bureau is provided in the organization chart for tuberculosis control, not because of its present program, but because of the program it should carry. If the Chicago Health Department adopts a program similar to that outlined in Chapter 26 (Tuberculosis Control in Chicago and Cook County) there will be ample justification for a separate bureau of tuberculosis control. School Health Services is accorded a bureau status both because of the extent of the problem and because of the recommendation that the health department shall assume responsibility for these services.

Special divisions are shown on the chart for three bureaus. Under the Bureau of School Health Services are the divisions of physical education, public health dentistry, and school nursing. The Division of School Nursing is also under the Bureau of Public Health Nursing. The three divisions under the Bureau of Maternal and Child Health Services are: (1) Division of Clinics, (2) Division of Mental Hygiene, and (3) Division of Nutrition. The Bureau of Geriatrics has two divisions: (1) Adult Hygiene and (2) Cancer Control. It might be argued that Mental Hygiene, Nutrition, and Cancer Control should be on a bureau level, but in their initial stages the status assigned them seems more appropriate. If and when the functions of these divisions are developed to the stage at which they encompass the full scope of their possibilities, they can and should be advanced to the bureau level.

Undoubtedly, more divisions will be established in the bureaus than are shown on the chart. While no sections, the next level of organization below divisions, are shown, it is expected that they will be set up in each division as needed. The Bureau of Laboratories, Drugs, and Biologics, for example, probably would organize bacteriological, chemical, and biological sections and possibly others.

PUBLIC HEALTH ENGINEERING BRANCH The services which this branch would cover exist now in rudimentary form only. Milk sanitation and certain phases of food sanitation are the sole functions conducted by the health department in the sanitation field. There is no semblance of a sanitary engineering organization in the strict sense of this term. Consequently, the development of the Sanitary Engineering Branch is a radical reconstruction job, with the restoration of certain units that have been lost and the addition of others that have not existed hitherto.

Four bureaus are recommended: (1) Bureau of Milk and Food; (2) Bureau of Housing; (3) Bureau of Rodent Control; (4) Bureau of Public Health Engineering and Sanitation.

The Bureau of Milk and Food would be the present Division of Milk and Food. The two divisions of this proposed bureau are (1) Milk and (2) Food. These two divisions correspond to the present milk and food sections. The Bureau of Housing is a newcomer in the proposed organization and would have two divisions: the Division of Survey and the Division of Complaints and Law Enforcement. The Bureau of Rodent Control represents a health department function which is nonexistent at this time, as does also the proposed Bureau of Public Health Engineering and Sanitation. All that can be said about these bureaus is to express the hope that they will be incorporated in the Chicago Health Department of the future.

DISTRICT HEALTH SERVICES BRANCH Since there are no district health services, this branch exists only on paper. The duties of its deputy director will, however, be considered in connection with discussion of the proposed plan for decentralization by the development of health districts.

PLAN FOR DECENTRALIZATION OF THE HEALTH DEPARTMENT

The foremost defect in the present organization of the health department, as well as in the plan of centralized organization just presented, lies, not in the plan of organization, but in its application to the territory which must be served. Certain activities such as laboratory service, milk sanitation, business management, personnel procedures, public health education, sanitary engineering, and the recording and processing of vital statistics must, of course, remain centralized. In a city as large as Chicago, however, it is physically impossible, without excessive costs, to render efficient and thorough health service in all categories from a single center of operations.

The time the personnel would spend in travel to and from far-flung operational fronts is a prohibitive factor; but more important still is the fact that persons needing service are deterred from reaching it if the center of operations is too far distant. The inevitable conclusion is that the service must be brought closer to the people to be served.

The functions which can be discharged best on a decentralized plan include the control of communicable diseases, infant and maternal health services, adult hygiene, public health nursing, the school health program, food sanitation, and other phases of environmental sanitation. These activities should, therefore, be divorced from the central headquarters and transferred to districts. A nucleus of specialized personnel in each subdivision of service would be maintained at central headquarters to give advisory supervision and co-ordinating direction to the district units through the deputy director in charge of the district health services. This headquarters group also would operate the central office district, assisted by such field staff as needed to provide the services offered in this district.

Under the plan of district organization proposed, each district health center would be administered by a health center director responsible to the deputy director of the District Health Services Branch. Through him all the services and supplies from central headquarters would be funneled to the districts. With the exception of the centralized services operated by the central office and available to all the districts, the organization plan for each district would be a reproduction in miniature of the plan of organization outlined for a centralized health department.

DISTRICT PLAN PROPOSED FOR CHICAGO There is nothing new or radical about the proposed district plan for decentralization. It has been developed to a high degree of perfection in Los Angeles County, where it has been in operation for more than twenty-five years. Boston and Baltimore have employed the system successfully for several years. Perhaps the closest parallel to Chicago, from the standpoint of size and problems, is the city of New York which adopted the district system in 1930.

No standard has been established as to the optimum population group to be used as the basis for district organization. In the cities mentioned, the population groups vary greatly, from about fifty thousand to two hundred and fifty thousand. The latter figure is used as a guide in New York. While effective administration is possible in a population group of that size, a maximum population at or near

two hundred thousand would be much closer to the ideal in highly congested areas. In areas with scattered populations, the number of people in a district might drop to one hundred thousand.

On the basis of the estimates just presented, Chicago should have at least twenty district health centers to meet the needs of the population expected by 1966. Adoption of a district form of administration by the Chicago Health Department would not be as radical a transition as might appear at first glance. The health department clinics already distributed around the city constitute a modified form of decentralization.

Even though the city of Chicago may not be prepared to develop a full system of district health units at once, at least two "pilot plants" should be considered for immediate installation. The first of these should be located in the area bounded by the railways paralleling Kinzie Street on the north, Western Avenue on the west, and the Chicago River on the east and south (Roosevelt-Ashland on Table 126). The second should be located in the area bounded by State Street on the west, Cottage Grove on the east, Twenty-sixth Street on the north, and Sixty-third Street on the south (Thirty-first-State on Table 126).

The Medical Center Commission has been established for the purpose of developing a medical center in the areas bounded by Ashland and Oakley Boulevards, Congress Street, and Roosevelt Road. This "medical center area" would be within the district in which installation of the first "pilot plant" is recommended (Roosevelt-Ashland). Grouped together in this area are the University of Illinois Colleges of Medicine and Dentistry, the Chicago Medical School, the Chicago Branch Laboratory of the Illinois Department of Public Health, the Institutes of Juvenile Research and Neuropsychiatric Research of the Illinois Department of Welfare, Cook County Hospital, Cook County Bureau of Public Welfare, the Chicago Department of Welfare, the Presbyterian Hospital, and the Loyola School of Medicine and Dentistry. Movement of the central headquarters of the Chicago Health Department to this location should be considered seriously, because it would facilitate the co-ordination of health and related activities. Through a liaison with institutions engaged in the teaching of physicians, nurses, and dentists, this arrangement also would furnish a splendid opportunity for the teaching and demonstration of public health methods to undergraduates in the various professions mentioned.

Table 126 shows the dates during which the proposed health center buildings might be constructed (1948, 1949-52, 1953-57, and 1958-62) over a period of fifteen years, the "city plan communities" to be included in each health center district, the population of each district (in 1940 and estimated for 1960), and the approximate location of each health center building.

TABLE 126. HEALTH DISTRICTS PROPOSED FOR THE CHICAGO AREA

| Development Stage ^a | City Plan Communities in Chicago ^b | Population (In 1,000's) | | Location of Health Center (Adjacent intersection) ^d |
|--------------------------------|---|-------------------------|-------------------|--|
| | | 1940 | 1960 ^c | |
| First (1948) | 28, 29, and 30 | 195 | 150 | Roosevelt-Ashland |
| Second (1949-52) | 31, 40B, and 59 (part) | 142 | 154 | 31st-State |
| | 32, 33A, and 34 | 248 | 199 | 51st-South Park |
| | 14 and 15 | 202 | 176 | North-Damen |
| | 12, 13, 16, and 25 | 219 | 202 | Chicago-Central Park |
| Third (1953-57) | 26 and 27 | 213 | 168 | Ogden-Central Park |
| | 42, 44, and 45 | 215 | 202 | 55th-Western |
| | 6 | 138 | 136 | Clark-Addison |
| | 7, 8, and 59 (part) | 181 | 190 | North-Ogden |
| | 48 and 49 | 120 | 188 | 79th-South Park |
| | 5C, 9, 10, and 11 | 205 | 209 | Lawrence-Central Park |
| | 19, 21B, 22B, 23, and 24 | 223 | 233 | North-Central |
| | 33B, 35, and 36 | 185 | 236 | 67th-Stony Island |
| | 37, 55, 56, and 58 | 90 | 171 | 95th-Torrence |
| | 38, 39, 40A, and 41 | 98 | 207 | Archer-Pulaski |
| Fourth (1958-62) | 1 and 3 | 143 | 184 | Lawrence-Western |
| | 2 and 4 | 177 | 206 | Bryn Mawr-Broadway |
| | 43, 46, and 47 | 117 | 210 | 79th-Ashland |
| | 17, 18, 20, 21A, and 22A | 126 | 243 | Lawrence-Milwaukee |
| | 52, 53, and 54 | 95 | 185 | 111th-State |
| | 50, 51, and 57 | 62 | 202 | 103d-Vincennes |

^a Development stage shows whether the proposed health center is to be built by the end of the first, fifth, tenth, or fifteenth year.

^b The city plan communities are those which appear in the *Preliminary Comprehensive City Plan of Chicago*, prepared January, 1946, by the Chicago Plan Commission.

^c Figures for the 1965 population represent a rough estimate.

^d City health centers are to be located within easy walking distance, but not at the given intersections.

INCLUSION OF COOK COUNTY IN A DISTRICT PLAN The decentralization of health work along district lines as outlined for Chicago is considered not only suitable but also essential for immediate adoption, at least on a plan of progressive extension to all areas within each jurisdiction.² It is believed that eventually there is a real possibility that centralized authority with decentralized administrative units will prove to be so effective that the entire county, including Chicago, will find it wise to merge county and city health services under one

² Proposed districts for Cook County are suggested in the discussion of districting for Cook County in the first part of this chapter.

administrative headquarters. It is doubtful, however, whether this merger could be achieved without specific permissive legislation.

EMPLOYMENT OF WELL-QUALIFIED PERSONNEL ESSENTIAL

A program such as has been proposed may mean much or little depending upon the quality as well as the quantity of personnel employed. Reference to quality of personnel has been stressed throughout this chapter, but it cannot be stressed too much. Civil service status is essential, but under present circumstances is not enough, because the civil service standards and practices are far from satisfactory. A merit system of the highest order is essential, and such a system must be free to function without political considerations. For certain personnel, for example, nurses, the National Organization for Public Health Nursing (N.O.P.H.N.) has prescribed well-recognized standards (see Appendix IV). In other instances standards are lacking, but it is a generally accepted principle that professional public health workers should have adequate specialized training for their respective jobs. Schools of public health are available and amply equipped to give such training in all fields of public health service. Except for persons whose seasoned experience under competent supervision may render them eligible for employment, a minimum of specialized training in a school of public health should be adopted as a standard. Even those who qualify on the basis of experience would profit by occasional refresher courses in a school of public health. For positions in the higher brackets of authority and responsibility, mature and successful experience in the field which he or she seeks to direct is an essential qualification. And finally, personal aptitude should weigh heavily in the balance. No amount of education will make a good health worker unless he has the requisite personal attributes, such as a friendly attitude, resourcefulness, industry, good judgment, and ordinary "horse sense."

PERSONNEL REQUIREMENTS FOR CHICAGO HEALTH DEPARTMENT (PROPOSED)

Table 127 presents the number of personnel needed in various categories of service to provide the ratios of personnel to population specified in the table. The data used in the calculation of these figures were those presented in Table 119 for Cook County, exclusive of Chicago.

Table 128 classifies the 1,655 persons considered necessary to staff

TABLE 127. RATIO OF SELECTED GROUPS OF PERSONNEL TO POPULATION
CHICAGO HEALTH DEPARTMENT (PROPOSED)

| <i>Type of Personnel</i> | <i>Number</i> | <i>Personnel per 1,000 Population^a</i> |
|-----------------------------|---------------|---|
| Medical officers | 141 | 24.96 |
| Public health nurses | 713 | 4.94 |
| Engineers and inspectors: | 336 | 10.48 |
| Public health engineers | 36 | 97.78 |
| Public health inspectors | 300 | 11.73 |
| Clerical | 249 | 14.14 |
| Public health dentists | 26 | 135.38 |
| Public health nutritionists | 4 | 880.00 |
| Public health educators | 1 | 3520.00 |

^a Based on 1945 Population Estimate (3,520,000) from City of Chicago, Bureau of Engineering.

TABLE 128. PERSONNEL ANALYSIS—TYPE AND NUMBER
CHICAGO HEALTH DEPARTMENT (PROPOSED)

| <i>Type of Personnel</i> | <i>Number</i> |
|---|---------------|
| Medical and laboratory staff | 238 |
| Public health nurses | 714 |
| Public health engineers } Public health inspectors } | 336 |
| Administrative and clerical staff | 260 |
| Public health dentists | 26 |
| Public health educators | 1 |
| Public health nutritionists | 5 |
| Miscellaneous | 75 |
| Total | 1,655 |

TABLE 129. PRIMARY PERSONNEL REQUIREMENTS FOR TYPICAL DISTRICT
HEALTH CENTER, CHICAGO HEALTH DEPARTMENT
(FOR POPULATION OF 200,000)

| <i>Type of Personnel</i> | <i>Number</i> |
|-----------------------------------|---------------|
| District health officer | 1 |
| Assistant health officer | 1 |
| Physicians (full time) | 7 |
| Dentists | 2 |
| Clinic technicians | 4 |
| Public health nurses | 41 |
| Public health engineers | 1 |
| Inspectors | 12 |
| Health educators | 1 |
| Nutritionists | 1 |
| Administrative | 16 |
| Miscellaneous | 5 |
| Part-time clinicians | ^a |
| (Other than full-time physicians) | |

^a Number to be based upon needs of particular health center.

the proposed health department by type of position and number of each type. Table 129 presents the same statistics for a sample district health office. A separate table for each proposed district is unnecessary, since each of the twenty will have approximately the same number and type of personnel.

ESTIMATED BUDGET REQUIREMENTS

The total minimum budget proposed for the reorganized Chicago Health Department is \$5,226,300, and the maximum budget, \$6,682,200. The budget for travel, maintenance, supplies, and equipment is \$600,000 in both budgets. These items constitute 11.48 percent of the minimum budget and 8.98 percent of the maximum budget. Table 130 presents a budget analysis by type of expenditures and percentage of total budget of each type. Table 131 lists the type of personnel, the number of each type, and minimum and maximum salaries recommended for full-time personnel in the proposed Chicago Health Department. A total of 1,655 full-time personnel is suggested, for whom the minimum salary requirements will amount to \$4,626,300 and the maximum \$6,082,200.

TABLE 130. BUDGET ANALYSIS: TYPE OF EXPENDITURE AND PERCENTAGE OF TOTAL BUDGET, TYPE OF PERSONNEL, AND PERCENTAGE OF TOTAL PERSONNEL, CHICAGO HEALTH DEPARTMENT (PROPOSED)

| TYPE OF EXPENDITURE | MINIMUM BUDGET | | MAXIMUM BUDGET | | PERSONNEL | |
|--|----------------|--------------------|----------------|--------------------|---------------|--------------------|
| | <i>Amount</i> | <i>Per-centage</i> | <i>Amount</i> | <i>Per-centage</i> | <i>Number</i> | <i>Per-centage</i> |
| Salaries, full-time personnel | 4,626,300 | 88.52 | 6,082,200 | 91.02 | 1,655 | 100.00 |
| Medical and laboratory staff | 862,900 | 16.52 | 1,195,400 | 17.89 | 238 | 14.38 |
| Public health nurses | 1,923,300 | 36.80 | 2,498,800 | 37.40 | 714 | 43.14 |
| Public health engineers and inspectors | 937,800 | 17.94 | 1,214,400 | 18.17 | 336 | 20.30 |
| Administrative and clerical staff | 642,000 | 12.28 | 840,000 | 12.57 | 260 | 15.71 |
| Public health dentists | 86,000 | 1.65 | 107,200 | 1.60 | 26 | 1.57 |
| Public health educators | 6,000 | 0.12 | 7,200 | 0.11 | 1 | 0.07 |
| Public health nutritionists | 18,800 | 0.36 | 23,200 | 0.35 | 5 | 0.30 |
| Miscellaneous | 149,000 | 2.85 | 196,000 | 2.93 | 75 | 4.53 |
| Travel, maintenance, supplies, equipment | 600,000 | 11.48 | 600,000 | 8.98 | ... | ... |
| Total | 5,226,300 | 100.00 | 6,682,200 | 100.00 | 1,655 | 100.00 |

RECOMMENDATIONS FOR CHICAGO HEALTH DEPARTMENT

It is recommended that:

1. A board of health consisting of at least seven members with six-

TABLE 131. TYPE AND SALARY RANGE OF FULL-TIME PERSONNEL, CHICAGO HEALTH DEPARTMENT (PROPOSED)

| TYPE OF PERSONNEL | NUMBER | ANNUAL SALARY | | TOTAL SALARIES | |
|--|--------|---------------|----------|----------------|----------|
| | | Minimum | Maximum | Minimum | Maximum |
| Director, Health Department | 1 | | | | |
| First Deputy Director, Health Department | 1 | \$15,000 | \$20,000 | \$15,000 | \$20,000 |
| Deputy Director, Preventive Medical Service | 1 | 10,000 | 12,000 | 10,000 | 12,000 |
| Deputy Director, District Health Service | 1 | | | | |
| Deputy Director, Public Health Engineering | 1 | 9,000 | 12,000 | 9,000 | 12,000 |
| Chief, Bureau of Communicable Disease Control | 1 | | | | |
| Chief, Bureau of Tuberculosis Control | 1 | | | | |
| Chief, Bureau of Venereal Disease Control | 1 | | | | |
| Chief, Bureau of School Health Services | 1 | | | | |
| Chief, Bureau of Public Health Nursing | 1 | | | | |
| Chief, Bureau of Maternal and Child Health | 1 | | | | |
| Chief, Bureau of Geriatrics | 1 | | | | |
| Chief, Bureau of Milk and Foods | 1 | 8,500 | 10,000 | 8,500 | 10,000 |
| Chief, Bureau of Housing | 1 | | | | |
| Chief, Bureau of Rodent Control | 1 | | | | |
| Chief, Bureau of Sanitation | 1 | | | | |
| Chief, Bureau of Administrative Service | 1 | | | | |
| Chief, Bureau of Laboratory, Drugs, Biologics | 1 | | | | |
| Chief, Division of Clinics | 1 | | | | |
| Chief, Division of Adult Hygiene | 1 | | | | |
| Chief, Division of Public Health Dentistry | 1 | | | | |
| Chief, Division of Nutrition | 1 | | | | |
| Chief, Division of Physical Examinations | 1 | | | | |
| Chief, Division of School Nursing | 1 | | | | |
| Chief, Division of Cancer Control | 1 | | | | |
| Chief, Division of Mental Hygiene | 1 | 6,000 | 7,200 | 6,000 | 7,200 |
| Chief, Division of Milk | 1 | | | | |
| Chief, Division of Food | 1 | | | | |
| Chief, Division of Housing Survey | 1 | | | | |
| Chief, Division of Housing Complaint and Enforcement | 1 | | | | |

| | | | | | |
|--|-----|-------|-------|-----------|-----------|
| Chief, Division of Personnel | 1 | | | | |
| Chief, Division of Records and Public Health Statistics | 1 | | | | |
| Chief, Division of Office Services | 1 | | | | |
| Chief, Division of Procurement and Accounts | 1 | 6,000 | 7,200 | 6,000 | 7,200 |
| Chief, Division of Maintenance | 1 | | | | |
| Assistant to Director, Health Department, Planning Administration | 1 | 5,000 | 6,200 | 5,000 | 6,200 |
| Chief, Division of Public Health Education and Public Information | 1 | | | | |
| Chief, Division of Public Health Research and Statistics | 1 | 6,000 | 7,200 | 6,000 | 7,200 |
| Chief, Division of Public Health Co-ordinator Official and Voluntary Health Agencies | 1 | | | | |
| Assistant Chief, Bureau of Public Health Nursing Administration | 1 | 5,000 | 6,200 | 5,000 | 6,200 |
| Assistant Chief, Bureau of Public Health Nursing Education | 1 | 5,000 | 6,200 | 5,000 | 6,200 |
| Consultants, Bureau of Public Health Nursing | 6 | 4,000 | 5,200 | 24,000 | 31,200 |
| Supervisors, Bureau of Public Health Nursing | 74 | 3,200 | 4,000 | 236,800 | 296,000 |
| Staff Public Health Nurse | 630 | 2,600 | 3,400 | 1,638,000 | 2,142,000 |
| Assistant Chief, Bureau of Communicable Disease Control | 1 | 5,000 | 6,200 | 5,000 | 6,200 |
| Supervising physicians | 18 | 4,400 | 6,200 | 79,200 | 111,600 |
| Physicians | 108 | 3,600 | 5,400 | 388,800 | 583,200 |
| Chief, Milk Production and Transportation Section | 1 | 4,000 | 5,200 | 4,000 | 5,200 |
| Chief, Milk Processing, Pasteurization and Distribution Section | 1 | 4,000 | 5,200 | 4,000 | 5,200 |
| Chief Public Health Engineer | 1 | 6,000 | 7,200 | 6,000 | 7,200 |
| Supervisors, Bureau of Housing | 6 | 3,200 | 4,000 | 19,200 | 24,000 |
| Inspectors, Bureau of Housing | 70 | 2,600 | 3,400 | 182,000 | 238,000 |
| Supervisors, Bureau of Milk and Food | 9 | 3,200 | 4,000 | 28,800 | 36,000 |
| Inspectors, Bureau of Milk and Food | 180 | 2,600 | 3,400 | 468,000 | 612,000 |
| Supervisors, Bureau of Sanitation | 1 | 3,200 | 4,000 | 3,200 | 4,000 |
| Inspectors, Bureau of Sanitation | 10 | 2,600 | 3,400 | 26,000 | 34,000 |
| Public Health Engineering Investigator, Bureau of Sanitation | 4 | 3,200 | 4,000 | 12,800 | 16,000 |
| Supervisors, Bureau of Rodent Control | 4 | 3,200 | 4,000 | 12,800 | 16,000 |

TABLE 131. TYPE AND SALARY RANGE OF FULL-TIME PERSONNEL, CHICAGO HEALTH DEPARTMENT (PROPOSED)
(Concluded)

| TYPE OF PERSONNEL | NUMBER | ANNUAL SALARY | | TOTAL SALARIES | |
|---|--------|---------------|---------|----------------|-----------|
| | | Minimum | Maximum | Minimum | Maximum |
| Inspectors, Bureau of Rodent Control | 40 | 2,600 | 3,400 | 104,000 | 136,000 |
| Statisticians | 3 | 2,600 | 3,400 | 7,800 | 10,200 |
| Administrative personnel ^a | 37 | 3,200 | 4,000 | 118,400 | 148,000 |
| Administrative personnel ^a | 142 | 2,400 | 3,200 | 340,800 | 454,400 |
| Administrative personnel ^a | 70 | 1,800 | 2,400 | 126,000 | 168,000 |
| Laboratory personnel | 9 | 3,600 | 4,800 | 32,400 | 43,200 |
| Laboratory personnel | 30 | 3,200 | 4,000 | 96,000 | 120,000 |
| Laboratory personnel | 30 | 2,600 | 3,400 | 78,000 | 102,000 |
| Laboratory personnel | 25 | 1,800 | 2,400 | 45,000 | 60,000 |
| Miscellaneous, including attendants, technicians and other services | 5 | 3,200 | 4,000 | 16,000 | 20,000 |
| Miscellaneous, including attendants, technicians and other services | 25 | 2,400 | 3,200 | 60,000 | 80,000 |
| Miscellaneous, including attendants, technicians and other services | 25 | 1,800 | 2,400 | 45,000 | 60,000 |
| Miscellaneous, including attendants, technicians and other services | 20 | 1,400 | 1,800 | 28,000 | 36,000 |
| Dentists | 25 | 3,200 | 4,000 | 80,000 | 100,000 |
| Nutritionists | 4 | 3,200 | 4,000 | 12,800 | 16,000 |
| Total | 1,655 | | | 4,626,300 | 6,082,200 |

^a Clerical, stenographers, machine operators, etc.

year overlapping terms of office shall be substituted for the present three-member board.

2. This board shall be appointed by the mayor and approved by the City Council of Chicago from a list of three eligibles for each position, submitted by responsible professional and civic organizations.

3. In addition to at least two physicians, the membership of the board shall include various lay leaders interested in the public's health.

4. The board shall be endowed with authority to establish policies for the management of all functions under its jurisdiction within the city of Chicago and with power to approve reorganization or otherwise to rearrange the structure of the operational body to be designated as the Chicago Health Department.

5. The board shall have power to recommend the addition of new functions which now are missing in the health program and to take proper steps to have returned to its jurisdiction those functions which properly belong to health administration but have been transferred to other local governmental agencies.

6. An officer designated as Commissioner of Health, or by some other suitable title, who is not represented in the membership of the board, shall be employed by the board to administer the program of the health department.

7. The officer specified in recommendation 6 shall be given full authority to employ, discharge, or discipline subordinate personnel as the conditions may justify, subject to the approval of the board and in accordance with the State Civil Service Act.

8. Primary consideration shall be given to the elevation of qualification standards for professional personnel to a level meriting recognition by the respective professional organizations.

9. All employees of the department appointed by their executive officer shall comply with civil service requirements, and the practice of repeated temporary appointments shall be discontinued.

10. A policy shall be adopted whereby a quota of employees in each professional classification may be sent each year to a recognized school of public health for technical training.

11. Along with the technical training program there shall be continuous inservice training conducted under competent leadership for all classes of public health workers.

12. The department shall present each year to the board for publi-

cation, and the board shall publish, a full and accurate account of the department's activities.

13. Consideration shall be given to the establishment, in conjunction with the Cook County Department of Public Health, of a central tabulating unit to process all the records of the city and county health departments.

14. The personnel of the Chicago Health Department shall be augmented to a point commensurate with the obligations of the department to furnish the city with a complete and adequate health service, as proposed in this report.

15. The health department shall continue to maintain and develop a closer liaison with the voluntary agencies engaged in various phases of health work to the end that an integrated working relationship may be achieved, utilizing to the fullest extent the voluntary forces as supplemental to the official health program.

16. Immediate steps shall be taken toward the development of a system of decentralized administration on the basis of approximately twenty health districts.

17. The Chicago Health Department shall join with Cook County in securing a special tax under the Searcy-Clabaugh Act, the funds resulting to be allocated on an appropriate basis to the city and the county.

FINANCES AND APPRAISALS

by *K. E. Miller, M.D.*

WITHIN CERTAIN LIMITATIONS, health is a purchasable commodity. It has, therefore, become a popular conception that the per-capita expenditure for health is a reliable index of the amount of health protection afforded to any community. First there is the question of the way in which the money is spent—whether for skilled service or merely for political patronage. Moreover, the phrase “health service” must be interpreted. If health service includes only the work of the health department, one picture results; if the health work performed by other official agencies is included, the picture is quite different. In Chicago, for example, tuberculosis control and environmental sanitation are carried on, not by the health department, but by other official agencies, although no one could deny that these services are proper health department functions. The tuberculosis control program in Chicago includes hospitalization. Should the very large expenditures for this purpose be credited for health services, or should they not? The usual calculations of per-capita expenditures exclude costs of hospitalization. In some cities garbage disposal is a health department function and thus is classified as a health service.

The work of voluntary agencies in the health field also indirectly enters into the calculation of the total sums which must be expended for official services. Provision of certain health services by the official health agency can be reduced according to the amount of services rendered by voluntary agencies. Finally, the health services provided by physicians in private practice and by voluntary hospitals and clinics are certainly vast, although they cannot be measured. It is said on good authority, for example, that at least 80 percent of the babies in one Chicago suburb are under the regular private care of pediatricians from birth. Obviously, that community needs to spend only very small sums for the maintenance of infant and maternal health clinics in order to cover this field in a highly satisfactory manner. Calculations of per-capita expenditures for health in the Chi-

ago-Cook County area do not reflect the cost of the considerable amount of health work performed in the hospitals and clinics.

The foregoing discussion has been presented to show that the use of a community's per-capita expenditures as an index of the adequacy of its health services is meaningless unless the total situation in that community is considered also. For this reason, comparison of one community with another on the basis of per-capita expenditures alone is likely to be fallacious. On the other hand, comparison of the per-capita expenditures for health with the expenditures for other tax-supported services does provide a rough estimate of the weight accorded health matters in a community.

The problem of determining what the voluntary agencies spend for health work is even more involved. On one hand, comparatively few of their activities are earmarked specifically as health services; on the other hand, they render comparatively few services which are without some health significance. It was decided to include only the expenditures of voluntary agencies which employ field workers or maintain clinics. The health implications in the activities of the other agencies seem rather remote and confined almost wholly to education.

BUDGETS OR EXPENDITURES FOR HEALTH WORK IN CHICAGO

The total amount budgeted or expended for health work in Chicago during 1945 was \$9,440,248. Of this total, more than two thirds (\$7,713,970) was budgeted by three official agencies: the Chicago Health Department, the Municipal Tuberculosis Sanitarium, and the Bureau of Housing Inspection. The remaining \$1,730,278 represents the amounts expended for health work by twenty-three voluntary agencies.

CHICAGO HEALTH DEPARTMENT BUDGET Table 132 summarizes the 1945 budget of the Chicago Health Department. The outstanding item is the allotment to venereal disease control, which represents more than one third of the total. While this service probably could not be performed adequately on a smaller expenditure, the amount involved is obviously out of proportion to the allotments for other public health services. The remedy for this situation is, not a reduction in the funds spent for venereal disease control, but appropriate increases in the allotments for other health department services.

Fees for services and inspections.—Fees collected in Chicago during 1945 as a result of the activities of the Chicago Health Department totaled \$4,637,223. These fees are of two varieties: (1) those

TABLE 132. BUDGET FOR CHICAGO HEALTH DEPARTMENT

| <i>Divisions of Service</i> | <i>Amounts Budgeted</i> |
|---|-------------------------|
| President's Office | \$47,856 |
| Division of Administrative Services and | |
| Vital Statistics | 297,672 |
| Division of Preventive Medicine | 185,790 |
| Medical and Field Nursing Service | 600,000 |
| Child Welfare Section | 190,978 |
| Venereal Disease Control | 468,440 |
| Laboratory Section | 181,128 |
| Contagious Disease Hospital | 360,393 |
| Dairy Inspection Section | 197,532 |
| Food Inspection Section | 107,568 |
| Miscellaneous | 412,607 |
| Total | \$3,049,964 |

collected by the health department and (2) license fees collected by the office of city collector as a result of inspections made by health department personnel. About \$91,326 was collected by the health department for the following services: certified copies of birth and death certificates at \$1.00 each, \$86,616; birth registrations, \$2,484; licenses to assistant undertakers, \$2,191; permits for day nurseries, \$35.

Total license fees collected by the office of the city collector on the basis of health department inspections amounted to \$4,545,897, more than four fifths (\$3,803,800) for 8,645 liquor licenses.

License fees collected from other sources amounted to \$742,094, distributed as follows:

| <i>Type</i> | <i>Number</i> |
|---|---------------|
| Bakeries, retail | 984 |
| Bakeries, vehicles | 1,456 |
| Bakeries, wholesale | 143 |
| Bakeries, pro. wholesale | 20 |
| Confectionary manufacturers | 134 |
| Food dispensers | 8,308 |
| Food purveyors and milk stores | 8,158 |
| Food purveyors | 14,668 |
| Food establishments, wholesale | 1,540 |
| Food, wholesale, itinerant vendors | 97 |
| Ice dealers | 65 |
| Ice vehicles | 396 |
| Milk stores | 1,698 |
| Produce dealers, wholesale | 638 |
| Slaughtering, rendering, and glue factories | 26 |

The fees collected by the health department are bona fide fees for service. The license fees which the city collects on the basis of inspections made by the health department, however, are clearly for revenue purposes, since the services performed by the health department inspectors are in no way commensurate with the fees levied. The validity of this statement is demonstrated unquestionably by comparing the \$4,545,897 obtained by the city from license fees with the \$107,568 in the health department budget allotted to the Food Inspection Section.

No inspector should have anything whatever to do with the collection of fees either for inspection or for license. Fees for inspection should be eliminated wholly as unsound in principle. License fees can be justified only as a method of obtaining revenue. Collection of a license fee has no place in a straightforward health program. If the shock of dispensing with license fees is too great to bear, they should be levied by a central agency and paid to that agency directly rather than to an inspector. Such fees as are collected should be placed at the disposal of the health department for allocation to any branch of the department where the need for funds may be most urgent. The impression has been unmistakable that inspection of establishments for which licenses are required has been largely incidental to the collecting of the license fee, rather than for purposes of sanitary control.

BUDGET OF THE MUNICIPAL TUBERCULOSIS SANITARIUM The establishment of the Municipal Tuberculosis Sanitarium under the Glackin Law was discussed in Chapter 26. Its program includes not only tuberculosis hospital and clinic services but also field nursing visits to patients in their homes. The 1945 budget was as follows:

Sanitarium Bureau

| | |
|---|------------|
| Administration division | \$ 770,300 |
| Subsistence of patients and employees' division | 324,000 |
| General house and property division | 439,000 |
| Maintenance and repairs division | 230,000 |

Dispensary Bureau

| | |
|-------------------------|-----------|
| Administrative division | 653,000 |
| Miscellaneous | 1,333,200 |

| | |
|-------|-------------------|
| Total | <hr/> \$3,749,500 |
|-------|-------------------|

BUDGET FOR INSPECTION SERVICES IN THE BUREAU OF HOUSING

The transfer of inspection services related to environmental sanitation to the Bureau of Housing Inspection in the Department of Building was described in Chapter 22 and attributed to well-meaning, but misguided, advice. Since some of the activities of this bureau are definitely in the health field, the expense of their maintenance must be included in a summation of health expenditures. The budget for the salaries and wages of inspectors in the Bureau of Housing Inspection is as follows:

| <i>Personnel</i> | <i>Amount per Person</i> | <i>Amount per Grade</i> |
|------------------------------|------------------------------|-----------------------------|
| Chief sanitary inspector (1) | \$5,622 | \$5,622 |
| Supervisor of inspectors (1) | 3,462 | 3,462 |
| Sanitary inspectors (12) | 2,964 | 35,568 |
| Sanitary inspector (1) | 2,472 | 2,472 |
| Housing inspectors (8) | 2,472 | 19,776 |
| Total | | <hr/> \$66,900 |

The collection of fees is an activity of major importance in the housing bureau. Inspections made by its staff are used as the basis for fees collected by the city collector. The housing bureau does not know and could not estimate the total amount of the fees obtained as a result of its inspectors' work. This knowledge would, of course, have practically no significance from the standpoint of health except as an indication of the extent of time and effort expended upon activities with little or no health value by men who should be engaged in health work. The following list of establishments, persons, and functions which come under the jurisdiction of the housing inspectors illustrates the heterogeneous nature of their duties: animal care (feed stables, pet shops, and other places for care of animals); barber shops; bill posting; brick and clay products; extermination by fumigation; feed dealers; florists; hardware and paint stores, retail; natatoriums; roofers, manufacturing; scavengers, private; second-hand bottle dealers; tobacco dealers; trailer camps.

The only inspections which can be considered significant from the health point of view are those concerned with barber shops, extermination by fumigation, natatoriums, private scavengers, and trailer camps.

HEALTH EXPENDITURES BY VOLUNTARY AGENCIES IN CHICAGO

Twenty-three voluntary agencies reported expenditures for health

services considered appropriate for inclusion in the estimate of Chicago's total health expenditures during 1945.¹ The combined total was \$1,730,278. Part of this expenditure was for services provided in areas of Cook County outside Chicago. It was impossible, however, to determine the proportionate cost of services rendered in Chicago and in the county outside Chicago.

BUDGETS OR EXPENDITURES FOR COOK COUNTY
(EXCLUSIVE OF CHICAGO)

Total expenditures for health in Cook County outside Chicago approximated \$662,606 in 1945. Of this total, \$526,947 represents budgets or expenditures reported by official agencies and \$134,317 the expenditures of five voluntary health agencies operated exclusively in Cook County outside Chicago.

HEALTH EXPENDITURES BY OFFICIAL AGENCIES The following tabulation gives the approximate amounts (in some instances representing budgets, and in others, expenditures) spent during 1945 in the operation of health services by official agencies in Cook County outside Chicago.

| | |
|---|------------------------|
| Cook County Department of Public Health | \$211,996 |
| Evanston Department of Health | 93,928 |
| Winnetka Health Department (including Kenilworth) | 27,904 |
| Cook County rural townships (23) | 16,185 |
| Municipalities over 20,000 (6) | 123,089 |
| Municipalities 10,000 to 20,000 (10) | 24,505 |
| Municipalities 5,000 to 10,000 (11) | 23,700 |
| Municipalities 1,000 to 5,000 (33) | 4,880 |
| Municipalities less than 1,000 (21) | 760 |
| | \$526,947 ^a |

^a All funds derived from local sources except \$131,152 from the state governments and the Federal Government.

The \$211,996 reported by the Cook County Department of Public Health is about 40 percent of the total. Approximately 60 percent (\$314,951) was reported for health departments in townships and municipalities, a not inconsiderable amount. There is little doubt but that the pooling of this \$314,951 with county health department funds, and at the same time vesting responsibility for the service in

¹ See Chapter 41 for list of these agencies and the amounts expended for health activities by each agency.

that department, would yield larger returns on the investment and strengthen all health interests in the county. As a means toward this end, a uniform method of distributing the cost among the entire population should be devised. A county-wide tax for health purposes in lieu of the allotments from general funds would seem to offer the best solution of this problem.

HEALTH EXPENDITURES BY VOLUNTARY AGENCIES IN COOK COUNTY The total amount expended for health by voluntary agencies cannot be given. Five agencies confining their activities to the area of Cook County outside Chicago reported a combined expenditure in 1945 of \$154,317.² To this figure should be added that unknown portion of the total expenditures of Chicago agencies which represents the cost of services rendered in the county outside Chicago.

ESTIMATE OF TOTAL EXPENDITURES FOR THE CHICAGO-COOK COUNTY AREA

More than ten million dollars was budgeted or expended in 1945 for health work in the Chicago-Cook County area. Local sources provided all the funds except for \$977,842 received from the Federal Government and the state mainly for venereal disease control. The distribution of state and Federal money was as follows:

| <i>Departments</i> | <i>Total</i> | <i>Federal</i> | <i>State</i> |
|--|------------------|------------------|------------------|
| Chicago Health Department | 847,606 | 662,606 | 185,000 |
| Cook County Department of Public Health | 113,272 | 32,356 | 80,916 |
| Evanston Department of Health | 17,880 | 17,880 | ... |
| Total | \$978,758 | \$712,842 | \$265,916 |

The following tabulation summarizes the total budgets and expenditures for health work in Chicago and in Cook County outside Chicago during 1945.

| <i>Chicago</i> | <i>Expenditures</i> |
|-----------------------------------|---------------------|
| Chicago Health Department | \$ 3,897,570 |
| Municipal Tuberculosis Sanitarium | 3,749,500 |
| Bureau of Housing Inspection | 66,900 |
| Voluntary agencies | 1,730,278 |
| Total | \$ 9,444,248 |

² See Chapter 41.

Cook County Outside Chicago

| | |
|---------------------------|--------------|
| Official agencies | 526,947 |
| Voluntary health agencies | 134,317 |
| <hr/> | |
| Total | \$ 661,264 |
| Grand Total | \$10,105,512 |

Ten million spent or budgeted for health work in a population of over 4,000,000 is a rather impressive sum. In considering the significance of this figure, however, it must be kept in mind that departments of health administer only about 44 percent of this total. Almost as large an amount (41 percent) represents expenditures for hospitalization (\$3,749,500 for the Municipal Tuberculosis Sanitarium and \$360,393 for the Contagious Disease Hospital). Only a little more than four million dollars, therefore, was available in 1945 for health services provided directly by official agencies.

This observation is not intended to imply that agencies other than health departments should spend less money on health service, but it does indicate the need for very substantial increases in the budgets of the health departments if they are to measure up to the standards of health service generally accepted. There is reason to believe, however, that by improvements in organization and administration considerably more could be accomplished with the money now available and that the same principles applied to future expenditures will effect substantial savings in the amount of funds required to reach the desired objective.

APPRAISALS

For every dollar spent for health service, at least a dollar's worth of service should be expected. By what means, however, is anyone to know what is a dollar's worth of service? This dilemma has confronted health experts ever since health service became an economic factor. In accounting for funds expended, it is a universal custom of health agencies to submit a list of services performed. By what means is the taxpayer to know whether or not those services are the best his money could buy, or even whether or not they were worth the price? Financing of preventive health work has always been an uphill job, because little effort has been made to evaluate health service in terms of dollars and cents. Moreover, health values are rated in negative, rather than positive, terms. The less illness we have, the better the health program, all other things being equal.

Viewing a list of health activities, the experienced health officer can recognize the difference between good and bad performance more by a sixth sense than otherwise, but the average taxpayer is without even this method of evaluation. Realizing this situation, the American Public Health Association has for many years been attempting to work out an appraisal system based upon recognized standards of performance. Some very useful standards have been adopted, but at best the measurement of performance in terms of standards remains a job for the health expert rather than the layman, and at best also there is no means of relating the work performed to the money spent.

In order to prosper or even to survive, every business establishment must place a value upon every item of material, labor, and overhead that goes into every product or piece thereof offered for sale to its customers. Thus are catalogue prices developed. If public health is a business, as it is asserted to be, there is no reason why the same process cannot be applied to its products. First there is the problem of developing the cost of each item of service, and then, by applying a mark-up differential, of establishing a service value. By this method any taxpayer, no matter how unlettered, could get a ready grasp of the dividends received upon his health dollar in terms, not of intrinsic, but of service values, which are in a broad sense comparable to the fee schedules of private physicians. The principal difference lies in the fact that the latter are on a retail and profit basis, whereas service value calculations in a health department would be of a wholesale and nonprofit nature. Such a plan is not altogether visionary. It has been explored in a limited way with very promising results. While it has been studied insufficiently to warrant a formal recommendation, the possibilities of a successfully adjusted appraisal plan that would reduce miscellaneous items of service to a service value basis, and hence to a common denominator, are so enormous as to invite a well-planned program of research in which a wide representation of group judgment should be brought to bear on the subject.

Meanwhile, each health department can and should set up a well-considered system of office records designed to give a verifiable portrayal of the volume and character of work performed in each branch of the departmental program. Moreover, the record forms should be so devised as to render the records readily transferable to punch cards for machine processing. As a means to this end, an expert record analyst should be engaged to assist in setting up the system. It is pos-

sible that such assistance might be obtained from the United States Public Health Service. A standard record system not only would produce significant records for the guidance of the department and the enlightenment of the public but also would make them adaptable to the appraisal schedules of the American Public Health Association.

Part III

FACILITIES AND SERVICES
FOR MEDICAL CARE

MEDICAL CARE BY PHYSICIANS IN THE CHICAGO-COOK COUNTY AREA

by *Edward T. Thompson, M.D.*

VIGOR AND HEALTH are a community's greatest assets—illness the greatest liability. The whole social economy of an area is directly affected by the health of its citizenry. Provision for a high order of medical service is essential to the welfare of a community.

Every one needs medical care at some time. The amount and type of service needed by the people is, however, not always the same as what they want or demand. Demand represents the expressed desire or request for medical care. Actual needs may not be expressed or even recognized by the individual or the community. The medical care given may apparently satisfy all demands and still lag far behind the need for essential services. Today, plans whereby adequate medical care can be made available to all groups and classes of people are among the foremost domestic issues facing this country.

Adequate medical care means that there is a sufficient volume of good medical service to meet the actual health needs of the community according to the standards of advancing medical practice, since what is considered adequate at one time may not be later. Standards of good medical care cannot be formulated once and for all time. They are constantly changing.

The pattern of medical care in a metropolitan area is extremely complex. The scope of the survey discussed in this chapter was restricted to consideration of the existing services and facilities for medical care by physicians and to their evaluation in the light of the needs of the area. Medical care rendered by hospitals, outpatient facilities, nursing homes, and the nursing profession are discussed in succeeding chapters. Services provided by chiropractors, naturopaths, osteopaths, and other such groups in the medical field were excluded from the inquiry. The present chapter deals with medical care given by private physicians practicing in the Chicago-Cook County area.

NUMBER AND DISTRIBUTION OF PRACTICING PHYSICIANS

It is estimated that in 1946 there were approximately 5,500 practicing physicians in the area—about 4,800 in Chicago and 700 in Cook County, exclusive of Chicago. These estimates are based on information obtained from the Chicago Medical Society, the War Manpower Commission, a physicians' mailing service, and the classified directory of physicians and surgeons published in the *Chicago Red Book*. A total of 5,323 physicians was listed from these various sources. It is believed that this figure represents fairly accurately the number of physicians in the area who are engaged in the care of patients, exclusive of interns, residents, and teachers of preclinical medical sciences.

In terms of the 1940 population, Chicago has a ratio of one physician to every 700 persons and Cook County exclusive of Chicago, one physician to 950 persons. The rate for the United States as a whole is one physician per 1,000 persons.

Distribution of the physicians throughout the area is markedly uneven. A large proportion of the practicing physicians are located in the central business district of Chicago and a few of the suburban towns. According to available information, fully a third of the municipalities in Cook County have no physician. In Chicago the ratio in forty-six of the seventy-five community areas of which the city is composed is less than one physician to every 1,000 residents. Two of these communities have no practicing physician in the area.

This unevenness of distribution is partially offset by the excellent transportation facilities in Chicago and Cook County. There is ample intercommunity and intracommunity transportation, although the time required to cover the distance is often considerable.

CLASSIFICATION OF PHYSICIANS BY TYPE OF PRACTICE

On the basis of the records obtained from the various sources of information, the area has 3,208 general practitioners and 2,115 physicians who limit their practice to special branches of medicine. These figures represent the individual physician's description of his practice, and in that respect they reflect the types of medical practice available at the time of this survey. In Chicago there are 2,845 general practitioners and 1,868 specialists; in the county outside of Chicago there are 363 general practitioners and 247 specialists. It is thus evident that about 40 percent of the physicians in the Chicago-Cook County area limit their practice to special branches of medicine.

A percentage distribution of the various types of practice reported by the physicians is given in Table 133. The classifications are mutually exclusive. Inspection of the table will show that about 10 percent of the practicing physicians are surgeons. The next highest ranking specialty categories in order of frequency are obstetrics-gynecology, ophthalmology-otorhinolaryngology, and internal medicine. Approximately 16 percent of the physicians limit their practice to one of these specialty groups.

TABLE 133. PERCENTAGE DISTRIBUTION OF PHYSICIANS CLASSIFIED BY TYPE OF PRACTICE, CHICAGO-COOK COUNTY, 1946

| TYPE OF PRACTICE | COOK COUNTY (INCLUDING CHICAGO) | | CHICAGO | COOK COUNTY (EXCLUDING CHICAGO) |
|---|------------------------------------|------------|-------------------------|---------------------------------------|
| | Number | Percentage | Percentage ^a | Percentage ^b |
| General practice | 3,208 | 60.3 | 60.4 | 59.5 |
| Surgery | 500 | 9.4 | 9.1 | 11.3 |
| Orthopedic surgery | 32 | 0.6 | 0.7 | 0.2 |
| Proctology | 21 | 0.4 | 0.4 | 0.5 |
| Plastic surgery | 11 | 0.2 | 0.2 | 0.0 |
| Neurological surgery | 5 | 0.1 | 0.1 | 0.0 |
| Obstetrics-gynecology | 335 | 6.3 | 6.3 | 6.4 |
| Ophthalmology, otology, laryngology | 266 | 5.0 | 5.0 | 5.0 |
| Internal medicine, allergy, cardi- ology, gastroenterology | 256 | 4.8 | 4.9 | 4.8 |
| Pediatrics | 149 | 2.8 | 2.6 | 3.6 |
| Industrial health | 144 | 2.7 | 2.8 | 2.3 |
| Neurology-psychiatry | 112 | 2.1 | 2.2 | 1.0 |
| Urology | 75 | 1.4 | 1.4 | 0.8 |
| Röntgenology-radiology | 64 | 1.2 | 1.1 | 2.0 |
| Dermatology | 53 | 1.0 | 1.1 | 0.6 |
| Pathology, bacteriology | 37 | 0.7 | 0.7 | 0.8 |
| Tuberculosis | 28 | 0.5 | 0.5 | 0.6 |
| Anesthesiology | 11 | 0.2 | 0.2 | 0.3 |
| Public health | 11 | 0.2 | 0.2 | 0.3 |
| All other or unspecified | 5 | 0.1 | 0.1 | 0.0 |
| Total | 5,323 | 100.0 | 100.0 | 100.0 |

^a Total number of physicians 4,713.

^b Total number of physicians 610.

It is possible that the figures presented in the table overestimate the amount of specialized services rendered in the area. Verification of the classifications was not possible, but in the case of pediatrics further information was available against which the number reporting this specialty could be checked. In connection with a national survey by the Academy of Pediatrics, data were gathered from physicians in the Chicago-Cook County area who were limiting their

practice to the care of children. According to these findings,¹ in 1946 this area had 200 physicians in active practice in the field of pediatrics—165 in Chicago and 35 in Cook County exclusive of Chicago. The number tabulated in the present survey was 125 in Chicago and 24 in the area outside Chicago. If the figures with respect to this one specialty are any indication of the situation in the other categories, the probability that the number of physicians practicing a special branch of medicine has been overestimated would not appear to be great.

The classifications are based solely upon statements from the physicians relative to the types of their practice. No attempt was made to ascertain the number who have been certified by the various examining boards in the medical specialties or who are recognized as specialists by any other organizations.

AGE OF PRACTICING PHYSICIANS

The median age of the practicing physicians in the area at the time of this survey was 51 years. Less than a fourth of them were under the age of 40. Census figures (1940) for residents of the Chicago-Cook County area who were 25 years of age and over show a median age of 43 years. In comparison with the population, the physician group is older. Whether this difference is due to the retention of younger physicians in the armed forces or to the influx of older physicians from the rural areas into this locality or to some other factor is not known.

Age distributions of the physician group classified according to type of practice—general practitioners and specialists—are presented in Table 134 in terms of the percentage at each age level. The large majority of the physicians at both the lower and the upper age levels are general practitioners. It will be noted from the figures given in the table that few of the physicians under 30 years of age in the area had limited their practice to a specialty. After the age of 30 the number of specialists progressively increases until about the age of 50, and gradually decreases at each age level thereafter. In the age group 70 years and older—which includes 9 percent of the total number of practicing physicians—61 percent are general practitioners, and 39 percent are specialists.

¹ From unpublished data released for use in the Chicago-Cook County Health Survey by the state chairman of Illinois for the Academy of Pediatrics' Study of Child Health Services.

TABLE 134. PERCENTAGE OF PHYSICIANS IN GENERAL AND SPECIAL PRACTICE CLASSIFIED ACCORDING TO AGE,
CHICAGO-COOK COUNTY, 1946

| TYPE OF PRACTICE | AGE GROUPS ^a | | | | | | | | | | |
|-----------------------|--------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--|---|
| | Per- centage under 30 (186) | Per- centage 30-34 (508) | Per- centage 35-39 (560) | Per- centage 40-44 (573) | Per- centage 45-49 (668) | Per- centage 50-54 (763) | Per- centage 55-59 (677) | Per- centage 60-64 (546) | Per- centage 65-69 (339) | Per- centage 70 and over (483) | Per- centage Age Unknown (20) |
| Cook County including | | | | | | | | | | | |
| Chicago | | | | | | | | | | | |
| General practitioners | 98.4 | 90.0 | 68.2 | 53.8 | 47.2 | 49.9 | 52.6 | 56.2 | 60.2 | 61.3 | 95.0 |
| Specialists | 1.6 | 10.0 | 31.8 | 46.2 | 52.8 | 50.1 | 47.4 | 43.8 | 39.8 | 38.7 | 5.0 |
| Chicago | | | | | | | | | | | |
| General practitioners | 98.2 | 91.0 | 67.7 | 54.2 | 47.3 | 50.3 | 53.2 | 55.9 | 59.7 | 61.8 | 94.7 |
| Specialists | 1.8 | 9.0 | 32.3 | 45.8 | 52.7 | 49.7 | 46.8 | 44.1 | 40.3 | 38.2 | 5.3 |
| Cook County excluding | | | | | | | | | | | |
| Chicago | | | | | | | | | | | |
| General practitioners | 100.0 | 83.3 | 71.0 | 50.7 | 46.4 | 46.3 | 46.9 | 59.3 | 63.9 | 57.6 | 100.0 |
| Specialists | 0.0 | 16.7 | 29.0 | 49.3 | 53.6 | 53.7 | 53.1 | 40.7 | 36.1 | 42.4 | 0.0 |

^a Numbers under each age class show the total number of physicians in specified age group.

The age for specializing appears to be around 40 years. Approximately a third of the physicians in the 35-40 age group limit their practice to a special branch of medicine. This is more than three times the number of specialists in the groups under 35 years of age.

AMOUNT OF MEDICAL CARE AVAILABLE

The ratio of physicians to population offers a crude index to the maximum amount of medical service that can be provided. The Chicago-Cook County area has one physician per 760 residents. It has been suggested by Ciocco and Altman² that the amount of work physicians are able to do would furnish a more reliable base from which to determine the number of physicians needed in a given community. From data obtained from physicians in private practice with regard to the number of patients they could see in a week and still give satisfactory care, these investigators report that the maximum working capacity of the average general practitioner lies between 125 and 160 patients weekly. The latter figure represents the patient load when the physician sees all patients at his office. Averages for specialists of all types were of the same order. The number of patients actually seen in a week was 112 per physician.

If the volume of care is calculated in terms of time required per unit of service and the total hours spent with patients weekly, the resulting patient load will be considerably smaller than the estimate cited. Duration of the average patient interview is reported to be about seventeen minutes.³ In terms of this amount of time per individual visit and a thirty-hour working week devoted to actual care of patients—exclusive of time for travel, study, and other aspects of practice—the maximum number of patients a physician can be expected to see weekly will be 106. On the basis of a 48-week year, the average physician can spend 1,440 hours in seeing patients. From the studies of Ciocco and Altman and of other investigators, a reasonable figure for the amount of care required per patient would be between 5.0 and 5.5 visits in a year. Radiology, industrial medicine, clinical pathology, and anesthesiology are not included. The maximum patient load the average physician can carry during a year would then be 968.

Ciocco and Altman's studies indicate that age is an influential fac-

² Antonio Ciocco and Isadore Altman, "The Patient Load of Physicians in Private Practice," *Public Health Reports*, LVIII (Sept. 3, 1943), 1329-51.

³ Burnet M. Davis, "A Note on Physician Time per Patient in Private Practice," *Public Health Reports*, LX (Sept. 21, 1945), 1113-18.

tor in determining the working capacity of physicians. They found that physicians achieve their peak of activity (in terms of number of patients) between the ages of 35 and 44 and that those under this age level have a higher average patient load than those 45 years of age and above. Their data show that the younger physicians not only see a greater number of patients each week but also see more patients per unit of work time. In the light of their findings the fact that approximately two thirds of the physicians in this area are forty-five years or older is of particular interest when considering the medical resources of the community. As a group, the Chicago-Cook County physicians have been in practice an average of twenty-three years.

The effect of the withdrawal from civilian practice of physicians under forty-five years of age upon the patient load of the older physicians has been estimated to be an increase over the total group average of about 50 percent—51 percent in Baltimore and 68 percent in the District of Columbia.⁴ On the basis of a maximum patient load of 968, the total 5,323 Chicago-Cook County physicians could care for more than five million persons each year. If it is assumed that the working capacity (in terms of number of patients seen) of the physicians in the older age groups should be half that of the total group, the over-all patient load during a year would then be around 3,500,000.

It would appear from these estimates that the Chicago-Cook County area has a sufficient number of physicians to provide an adequate amount of medical care to the people of the area. The total population of the Chicago-Cook County area is not expected to exceed 4,800,000 in the near future (by 1960)—the Chicago Plan Commission estimates a population of 4,710,000 for that year.

HOSPITAL AFFILIATION OF PHYSICIANS

The practice of medicine has developed to a stage which makes the special facilities of the modern hospital essential for adequate medical care of patients. Affiliation of practicing physicians with hospitals is consequently highly desirable. Such association has mutual advantages for the hospital, the physician, and his patients.

It was not possible under the conditions of this survey to gather personal data from the entire group of physicians. As a measure of expediency, a small sample was drawn at random from the total list

⁴ Ciocco and Altman, "The Patient Load of Physicians in Private Practice," *Public Health Reports*, LVIII (Sept. 3, 1943), 1329-51.

of names, and a special effort was made to secure information from these selected individuals which was not available from the sources previously cited. Questionnaires were sent to 250 physicians in private practice, and replies were received from 200 of them. Analyses of their responses form the basis for the discussions which follow.

The large majority of the selected group reported hospital staff appointments. Only seven, or 3.5 percent, of the group were not affiliated with some hospital. In terms of the total number of physicians, this would mean that about 96 percent of the practicing physicians in the Chicago-Cook County area have either regular or courtesy staff appointments. The estimate is considered to be remarkably high, and in view of the size and source of the sampling it may not represent existing conditions. At least half the selected group were members of the Chicago Medical Society. As it can be assumed that all these physicians have some hospital connections, it is probable that this finding may have been influenced by the sampling procedures.

Among the sample group, 87 percent were holding one or more medical staff appointments in the general and special hospitals in the area—174 physicians reported a total of 244 appointments. Courtesy staff appointments were held by 40 percent of the group.

PROBLEM OF SECURING ADMISSION OF PATIENTS TO HOSPITALS

The fact that the estimated proportion of physicians with hospital affiliations is high does not preclude difficulties in securing admission of patients to the hospitals. Approximately two thirds of the selected group reported difficulties in having their routine private patients admitted to voluntary hospitals. Among the explanations given to account for this problem, the shortage of hospital beds and the increased utilization of hospitals by participants in the Blue Cross Plan for Hospital Care were mentioned most frequently. Twenty-nine percent of the physicians in the sample group attributed their admission difficulties to lack of a sufficient number of hospital beds to meet the demand (see Chapter 46); 20 percent believed the increasing demand by persons who carry prepaid hospitalization insurance was the major reason for the situation.

The pay status of the patient appeared to have little bearing on this problem. Difficulty in securing admission of patients who could pay part of the cost of care was reported by 40 percent of the physicians sampled, and difficulty for patients who could pay nothing by 45

percent. Physicians experienced difficulty in the government (tax-supported) institutions as well as in the voluntary hospitals. Ten percent of the physicians had difficulty in getting admissions to tax-supported hospitals for the free or charity patients, and 35 percent had difficulty with respect to the voluntary hospitals.

Bed care was more difficult to obtain for certain types of conditions than for others. Varying degrees of difficulty were reported by different physicians in obtaining admission to hospitals for tuberculous, orthopedic, mental, and a few other types of patient. The hospital services to which admission was most difficult to secure and the percentage of physicians reporting difficulty were as follows: medical, 39 percent; surgical, 26 percent; cancer, 25 percent; maternity, 8 percent; and pediatric, 5 percent.

PREPAID SERVICE PLANS

Nonprofit prepaid hospital care is popular in the Chicago-Cook County area and in the adjacent areas, as is evidenced by the phenomenal growth of the Chicago Blue Cross Plan for Hospital Care since its establishment, January 1, 1937. In nine years the enrollment has reached the figure of 1,100,100 subscribers, of which 850,000 are residents of the Chicago-Cook County area. More than 20 percent of the entire population of the area is enrolled in this plan. The Health and Accident Underwriters Conference of Illinois has estimated that approximately 830,000 persons carry some type of commercial health and accident policy which provides hospitalization. At least 40 percent of the population of the area—a total of 1,680,000 persons—is insured for hospital service either in the Blue Cross or in commercial plans. In addition, the Health and Accident Insurance Underwriters Conference of Illinois estimates that 355,000 persons in this area have health and accident insurance with provisions for medical care, but not for hospitalization.

The rapid growth of the Blue Cross Plan for Hospital Care is attributable in large measure to the method of enrolling new members in groups of employed workers, some of which include many thousands of persons. Many of the groups are on a pay-roll deduction basis, but in many instances the cost is borne by the employer.

An attractive feature of this plan is the privilege it affords the subscriber of including members of his (or her) family, each of whom is entitled to the same scope of coverage. All benefits are available without any limit of cost in semiprivate rooms in any of the member hos-

pitals. These member hospitals are restricted to institutions approved by the American College of Surgeons. In addition to the various services usually provided in hospitals, benefits include X-ray therapy, physical therapy, oxygen therapy, special medications, care for quarantinable diseases, tuberculosis, nervous and mental disorders, and venereal diseases.

A serious problem faced by the Blue Cross Plan for Hospital Care in this area is its inability to fulfill its obligations to the 50,000 Negro subscribers, since they are not accepted by all the member hospitals. Many of the Negro subscribers who require hospitalization must be admitted to the Cook County Hospital under the guise of emergencies to secure the needed hospital care. In such cases this tax-supported institution is reimbursed by the Plan. When admitted to voluntary hospitals, the Negro frequently is not permitted to be attended by his physician, since Negro physicians have staff appointments at only two of the voluntary hospitals in the area.

Comments were solicited from the group of physicians surveyed with respect to the adequacy of this service plan. In the judgment of 70 percent of them it meets the need of the patient. Only 22 percent of the group felt that the plan was inadequate. Insufficient protection was a deficiency cited by three of every four reporting the plan as inadequate. These physicians believe that the coverage should be expanded to include medical care as well as hospital services.

A Blue Shield Plan for prepayment of medical, surgical, and obstetrical care was under study by the Chicago Medical Society at the time of this Survey.

FREE CARE BY PHYSICIANS IN HOMES AND OFFICES

No accumulative study was made of the amount of free care rendered by physicians, but it is known to be great. In addition to the amount of service provided on a voluntary basis in outpatient departments, clinics, and hospitals a large amount is rendered without charge at physicians' offices and in patients' homes. Of the 200 physicians comprising the sample group, 103 reported 13,375 office visits in 1945, for which no charge was made, an average of 125 free office visits per physician. An additional 2,435 home calls to nonpaying patients were made by 99 of the group, an average of 25 calls per physician. It is estimated, on this basis, that the total number of practicing physicians in the area during a year have 687,500 office visits and make 137,500 home visits for which they receive no remuneration. At

the rate of \$3.00 per office visit and \$5.00 per home call, the total value of this free medical service is estimated at \$2,750,000, or \$500 per physician per year.

The free service rendered by physicians in outpatient departments and clinics is discussed in Chapter 47.

PHYSICIANS AND PREVENTIVE MEASURES

A special query as to the physician's personal attitude toward the routine use of certain laboratory procedures was included in the questionnaire sent to the sample group of physicians. They were unanimous in their approval of routine urinalysis for every patient admitted to hospitals and clinics. Most of the group (87 percent) stated that complete blood counts and serology tests for syphilis also should be routine measures, but less than half of this physician group believed that chest plates for tuberculosis should be required of all patients admitted.

A lack of awareness of the benefits of routine chest X-ray examinations is apparent from these responses. The findings from this inquiry of a selected group of physicians point significantly to a need among the physicians in this area for more knowledge of the values of chest X-ray examinations and for greater appreciation of this procedure as a routine preventive measure. Tuberculosis control and its related problems are considered in Chapter 26.

RECOMMENDATIONS

It is recommended that:

Organized medicine shall extend prepaid medical care as rapidly as possible to the citizens of the Chicago-Cook County area.

MEDICAL-CARE PROGRAMS OF
PUBLIC WELFARE AGENCIES IN THE
CHICAGO-COOK COUNTY AREA

by *Edward T. Thompson, M.D.*

and *Marjorie Bates*

IT IS AN ACCEPTED FACT that medical care adequate in quantity and quality should be available to all residents of a community. It is also recognized that provision for persons who are unable to provide medical services for themselves is a public responsibility. The purpose of this chapter is to describe the medical programs of welfare agencies which are financed by public moneys and which furnish care directly to individuals known to be medically needy. These persons include the paupers and the medical indigents who cannot pay the costs of medical, dental, or other specified physical care without sacrificing the necessities of life for themselves and their families.

In the Chicago-Cook County area there are three welfare agencies through which public funds are available to aid the medically needy. An effort was made in this survey to obtain a brief description of the objectives of their medical programs, the sources of funds for them, the regulations governing eligibility for these services, and the volume of service rendered. Each agency will be considered separately.

During the past fourteen years many changes have taken place in agency organization and in methods of administering relief, particularly with respect to Federal and state funds. In 1936 the responsibility for administering general relief in the area was assumed by the city of Chicago for its residents and by the individual townships in the county for their residents. Prior to this date the Cook County Relief Administration had been the administering agency for the whole area.

ILLINOIS PUBLIC AID COMMISSION

Chicago and Cook County receive through the Illinois Public Aid Commission certain state funds and Federal funds which are granted to the state under the assistance titles of the Social Security Act. Among these are moneys for General Relief, Aid to Dependent Children, Blind Assistance, and Old Age Pension. The commission is composed of seven citizens appointed by the governor and three state officers who serve *ex officio*. The function of the commission is to provide financial assistance and attendant social services to needy persons in their homes. Its purpose is to enable such persons and their families to carry on as normal citizens until they are economically able to meet their living expenses without governmental aid.

Under existing legislation the Illinois Public Aid Commission is the official policy-forming agency for state-wide administration of the categories of public assistance under the Social Security Act. Responsibilities for local administration of these categories are delegated to the county departments of public assistance which are branches of the commission, with the exception of Cook County, where the Cook County Bureau of Public Welfare is the agent of the commission. The Illinois Public Aid Commission has the additional responsibility of supervision in the local relief units which receive state funds for general relief and has developed rules and regulations which must be followed by these local units. Policies of the medical care program are formulated with the co-operation of the State Medical Advisory Committee and adapted for use in the Chicago-Cook County area.

Funds to defray expenses for medical, hospital, and dental services, as these are required, are either included in the grants to eligible recipients or under certain conditions are paid directly to the source of care. Direct payment is usually the plan in the general relief program.

The commission's medical care program is administered by the medical department, which is staffed by three medical social workers, who are called medical assistance consultants, and by three other professional social workers. The staff is responsible for the operation of the program and for consultative services concerned with general medical social problems or with individual cases.

In addition to the staff of the medical department, the Illinois Public Aid Commission employs a state supervising ophthalmologist,

who is responsible to the executive secretary of the commission. The ophthalmologist makes recommendations with regard to visual eligibility of blind applicants for assistance and recipients examined by other physicians and personally examines patients whose eligibility may be questioned under the terms of the Blind Assistance Act. He also makes recommendations, which are transmitted to the county departments, for medical or surgical treatment which may conserve or restore the recipients' vision.

In the county of Cook, where, the Cook County Bureau of Public Welfare is the agent of the commission, medical care for recipients of grants under the Social Security Act is administered through the district offices of the Public Assistance Division of this bureau. With respect to the local relief units, as part of the commission's responsibility for supervision of general relief it requires that plans of these local units for medical care be organized within the framework of the rules and regulations established by the commission and that they be submitted to the medical department for approval. In this area there are thirty-one local relief units—the incorporated town of Cicero, the city of Chicago, and twenty-nine townships in Cook County.

COOK COUNTY BUREAU OF PUBLIC WELFARE

The Cook County Bureau of Public Welfare is the agency delegated to provide financial aid to the needy in the county. In it are consolidated the administration of the social service functions of the various welfare divisions of Cook County. Through its Public Assistance Division it serves as the agent of the Illinois Public Aid Commission in the operation of the social security programs in this area for Aid to Dependent Children, Blind Assistance, and Old Age Pension.

The bureau is administered by a director who is responsible to the Board of Commissioners of Cook County. An assistant to the director serves as division director of public assistance. The medical care program of the agency functions under the Medical Department of the Public Assistance Division.

The work of the Medical Department of the bureau is greatly complicated by the interlocking and overlapping of functions of a number of different relief and welfare programs under state and municipal agencies. There is evidence of a considerable amount of duplication of effort which if eliminated would bring about an im-

provement in services to the medically needy and a saving of public moneys.

ORGANIZATION OF MEDICAL DEPARTMENT

The Medical Department of the bureau is administered by a staff of medical social workers under a supervisor who is responsible to the director of the Public Assistance Division. The staff consists of 8 medical social workers and 27 secretarial and clerical workers. The agency maintains 6 offices, all of which are located in Chicago—a central office and 5 district offices, distributed so as to serve large sections of the county. Personnel of the Medical Department at the central administrative office includes the supervisor, 2 assistant supervisors, and a secretarial-clerical staff of 4. One medical social worker is assigned to each district, and the remaining personnel is distributed among the 5 district offices, working under the supervision of the district medical social worker.

Members of the professional staff of the department are selected from a list of persons qualifying for the positions through civil service examinations. They are appointed subject to a probationary period of six months. In the absence of a civil service list for the position in question, qualified persons may be appointed on a temporary basis with the approval of the supervisor of the Medical Department, pending examination at a later date. The job titles specified for medical social workers in this agency are as follows: supervisor of medical assistance, supervisor of medical assistance to the blind, assistant supervisor of medical assistance, and consultant on medical assistance.

The supervisor of the department is responsible for the administration, planning, and development of the medical care program of the agency. She has two assistant supervisors, one of whom serves as supervisor of blind assistance. This position became necessary when special legislation was enacted in 1943 to repeal an act in relation to blind persons in Illinois.¹

Consultants on medical assistance serving in the district offices are functionally responsible to the supervisor of the Medical Department, but administratively they are under the jurisdiction of the district supervisor in the offices to which they are assigned. Their function is to provide consultative services in medical social planning for

¹ *Laws of Illinois Relating to Public Aid, 1945-1947, Section VI, Illinois Public Aid Commission.*

recipients and to review the medical needs of these persons. They directly control the medical expenditures in their respective districts. Since the activities of these consultants are primarily indirect, without personal contact with the recipients, these workers have a fundamental responsibility for a teaching-supervision type of service which is planned to give to the case-work staff a broad understanding and appreciation of the importance of adequate care to meet the health needs of clients.

PLAN OF MEDICAL PROGRAM The present medical care program of this agency has been patterned after a plan organized in 1933, when there was need for medical care planning for large numbers of persons during the period of economic dislocation. At that time the Health Division of the Council of Social Agencies of Chicago initiated a plan for an over-all medical care program which was adopted by the Cook County Bureau of Public Welfare. A special department within the bureau was set up to administer this program. In 1936, when the responsibility for general relief was transferred to the city government of Chicago and to the townships in the county, the Medical Relief Service was absorbed by the newly established Chicago Relief Administration. It was not until several years after Illinois had qualified for social security funds that the bureau again had a plan for medical care. A medical social worker was appointed in 1941 to organize a medical program in the agency.

Two distinct types of medical care program are at present administered by the Cook County Bureau of Public Welfare. One of them provides the required medical services, hospital care, and dental services for persons receiving grants under the Social Security Act; the other concerns services rendered to the medically needy who are not recipients of financial assistance from public agencies. According to the Illinois statutes² when a person not a pauper, who has neither money nor property to pay medical expenses falls sick, he shall be given medical assistance by the Overseer of the Poor of the local relief unit, except in cases where such person falls sick in Chicago or Cicero, in which case the responsibility for care is placed on Cook County. This provision means that the medically needy in the twenty-nine townships of Cook County other than Chicago and Cicero are the responsibility of the local relief authority. If these townships are eligible for and receive state funds for general relief purposes the medical care expenses of these medically needy persons may

² *Illinois Revised Statutes*, 1945, Section XXV, Chapter 107.

be met in part, or wholly, by state allocations to the local township units. The situation is different when the medically indigent are residents of Chicago and Cicero, as these two municipalities are ineligible by law to receive state funds for this purpose. Medical care for these persons is provided only in Cook County Hospital or through the County Physicians' Service, regardless of whether the illness is acute or chronic and whether the required service can be rendered in the patient's home or must be given in a hospital.

Medical care for public assistance recipients.—Implicit in the Social Security Act is the charge upon the unit of government responsible for the administration of the assistance categories that provision be made for medical care compatible with health and well-being. Funds to defray medical expenses are included in the grants of recipients of Old Age Pension, Aid to Dependent Children, and Blind Assistance. In January, 1945, the Illinois Public Aid Commission increased the maximum Old Age Pension and Blind Assistance grants from \$40 a month, including medical expenses, to \$75 for cases in which an amount in excess of the \$40 is needed for medical services. Ceilings were removed from Aid to Dependent Children grants in October, 1945, so as to provide medical care to the extent required for all those participating in this program.

As of June, 1946, the period in which this survey was conducted, the total case load of the Public Assistance Division included 82,940 persons. The number of recipients of aid from the various subdivisions was as follows: Old Age Pension, 46,064; Aid to Dependent Children, 34,958 (which number represents 10,064 families); Blind Assistance, 1,918.

The method of giving the grant in cash to the recipient and allowing him to pay for services received reflects a basic concept of the agency. Such assistance comes to the needy as a personal right which carries with it the freedom to act through normal economic channels on a social plane with other citizens who are not receiving relief. This plan permits the recipient to choose his own physician and to pay for the services rendered, thereby maintaining the traditional relationship between physician and patient. Proponents of this method of disbursement believe that it is good for the morale of the recipients. The Cook County Bureau of Public Welfare is convinced of the wisdom of the plan.

Opponents of the present procedure cite that in actual practice the method does not work out satisfactorily. Many recipients feel that

money turned over to them should be for essential living expenses and that medical services should be provided as a relief matter. When part of the cash received has to be paid to the physician or to the hospital, these clients feel that they have been treated unfairly. The procedure favored by these opponents is to have all bills for medical and hospital expenses paid directly by the authorities.

Medical care for recipients of the various categories of public assistance now covers the following types of services: physicians' services in office, home, and hospital; dentists' services; clinic care; transportation to and from source of medical care (including ambulance service); hospital care; nursing home care; nursing or personal care necessitated because of illness; drugs and drug sundries; special diets and appliances of all kinds, including glasses, dentures, hearing aids, trusses, prostheses, and orthopedic shoes. X-ray, laboratory examinations, surgery, and consultations are not included. When a patient needs these services, he is referred to one of a selected group of hospitals and clinics designated for such services.

Because of the overcrowded conditions at Cook County Hospital, it has been necessary to develop a plan whereby care can be furnished on a paid basis in voluntary hospitals. The plan is intended to provide bed care for recipients of public assistance who are unable to obtain such care in any of the tax-supported institutions. Funds from the Illinois Public Aid Commission are furnished at a per diem maximum rate of \$6.00 per patient.

County physicians' service.—The County Physicians' Service is necessitated by the fact that under existing statutes medical indigents in Chicago and Cicero are the responsibility of Cook County. Its activities are limited to the medically needy who are not cared for by the Chicago Department of Welfare. Costs of the service are met by county funds.

At the time of this survey the staff of the County Physicians' Service consisted of thirty-nine physicians in active private practice who were on call for service. All of them are located in Chicago or Cicero, and both white and Negro physicians are included, as well as general practitioners and specialists.

Calls are usually allotted on the basis of seniority in service, since the distribution of the staff members bears no relation to the areas from which calls may originate. It is not always possible to follow this method, however, because physicians busy with their private practices are not eager to take calls from the County Physicians'

Service. They continue to accept them under certain conditions only in order to retain their pension and annuity fund status as staff physicians. For example, one physician will take calls only on Saturday; one is eighty years old and will take no calls at any great distance from his home; another limits his calls to one a day, and then only if they are received before 10 A.M.

The number of calls varies greatly in different sections of the area served. As few of the medically needy live in the well-to-do neighborhoods and many of the staff physicians practice in such sections, their service calls are frequently at great distances from their offices. Certain types of calls are not accepted by the County Physicians' Service. No calls are made at night. Maternity patients are referred to the Chicago Maternity Center, and children under one year of age to the Chicago Health Department. Cases of tuberculosis, cancer, and chronic diseases are referred to the Cook County Hospital system.

There has been a definite and gradual reduction in the demand for the County Physicians' Service during the past five years. This trend is indicated by the decrease in staff and in the expenditures for physicians' fees. Table 135 shows the size of the staff and the amount paid yearly for physicians' services during the years 1940-45, as reported by the Cook County Bureau of Public Welfare.

TABLE 135. NUMBER OF PHYSICIANS ON THE STAFF OF COUNTY PHYSICIANS' SERVICE AND AMOUNT PAID IN FEES, 1940-45

| <i>Year</i> | <i>Size of Staff</i> | <i>Fees Paid</i> |
|-------------|----------------------|------------------|
| 1940 | 70 | \$133,364.00 |
| 1941 | 68 | 121,640.50 |
| 1942 | 69 | 89,936.50 |
| 1943 | 54 | 51,768.50 |
| 1944 | 42 | 40,990.50 |
| 1945 | 35 | 47,311.00 |

Under the present setup there is no provision for drugs for medically indigent patients. Whatever medication the patient needs must be furnished by the physician from his personal supplies and at his own expense. Prescriptions ordinarily are not given, but if the patient requires drugs which the physician does not have on hand the physician may write a prescription to himself. Upon presentation of proper receipts, the Cook County Bureau of Public Welfare later will reimburse him for the amount of money expended for prescriptions of this type.

There is no supervision of the physicians on the staff of the County

Physicians' Service. They practice without responsibility to a central or controlling medical authority. When they refer patients for hospital care, these patients are dismissed so far as the County Physicians' Service is concerned. No attempt is made to follow through on the care obtained. There is no provision for continuing care for patients dismissed from the hospital when hospital physicians recommend such care. Unless an emergency call comes from the patient, the County Physicians' Service ordinarily has no further contact with the patient after he has been referred for hospitalization.

Cook County Hospital receives all bed care cases from the County Physicians' Service. A serious lack of integration of this service with Cook County Hospital is clearly evident. The situation undoubtedly works to the detriment of these hospitalized patients.

Technical supervision through advisory committees.—Although at the outset relief was generally considered an emergency measure, the Cook County Bureau of Public Welfare early realized its need for expert counsel and guidance on technical questions involving health problems of recipients. At the request of the bureau, a committee was appointed by the Chicago Medical Society to serve in an advisory capacity to the agency. A Medical Advisory Committee was organized in 1934 and continued to serve the bureau until the responsibility for relief, including medical relief, was transferred from this agency to the local relief units. When the bureau assumed the responsibility for administering the program under the Social Security Act, including medical care, the Chicago Medical Society was again asked to appoint an advisory committee. The members of this committee not only have rendered valuable help to the agency but also have acted as interpreters of the agency's program to their own professional group. In March, 1945, this committee ceased to function. The members resigned in protest against a plan for hospital care which excludes physicians from payment for hospital visits to recipients in Cook County. Their resignation is regrettable, since such counsel as the committee had furnished is a necessary adjunct to any good medical care program and is especially needed when the program is not under the direction of a physician.

In its more recent relationship to the Cook County Bureau of Public Welfare the Medical Advisory Committee assisted in the setting up of a payment plan for physicians' services acceptable to the Social Security Board. The plan provided for medical care grants to recipients of public assistance, who in turn were to pay their own

medical bills. This arrangement was a departure from the direct payment plan at first used by the bureau and then by the Chicago Relief Administration. The committee gave much thought and effort to making the plan workable and to its interpretation to the medical profession and other groups in the community. Other contributions of this committee include plans for physical examination of fathers of children who receive Aid to Dependent Children grants to determine such fathers' capacity for work, review and approval of a panel of participating physicians for the medical care program, and guidance in the formulation of policies with regard to medical care expenditures.

At the time of the survey, the Medical Department had only one advisory committee, a Dental Advisory Committee. This committee has been active since it was established in 1941. It is composed of three dentists, appointed by the Chicago Dental Society, who serve for two years. At the expiration of this period one of the three members is chosen as the chairman of the committee for the following two-year period. This committee assumes responsibility for the quality of the dental service rendered to recipients, approves applicants for the panel of participating dentists, reviews unusual case situations or expenditures or deviations from policy when requested by the agency, and advises on policies and procedures concerned with proper dental care for recipients.

Although the bureau has no organized advisory committee of druggists, representatives of the Chicago Retail Druggists Association were called upon at the outset of the program to give advice and assistance on questions relative to pharmaceutical practices. Through these individuals the co-operation of the druggists was enlisted.

PROCEDURES Various procedures are used by the Medical Department in the operation of the medical care program. In general, these are concerned with effecting within the agency a smoothly functioning program, establishing co-operative relationships with community agencies, and controlling medical expenditures.

Detailed rules and regulations have been established by the Illinois Public Aid Commission with respect to the administration of the division of which the medical department is a part. Consequently many of the activities of the department are concerned with clarifying and defining the agency's policies as these relate to the health problems of recipients in Cook County. As the need arises, the supervisor requests the services of the medical assistance consultants in the

commission, who in turn, when the situation requires, call upon the consultant in the Social Security Board. At such times the supervisor presents the questions for discussion and makes recommendations. Policies are further defined in interdepartmental meetings in which the supervisor and other heads of departments participate.

Considerable effort is given to interpreting to the staff the established policies and to supervising various phases of the program. Regular staff meetings are held every six weeks. Decisions in regard to the operation of the medical care program are interpreted, and the procedures to be followed are discussed. These meetings are scheduled and planned by the supervisor for the purpose of informing and directing the professional staff.

As understood by the agency, the primary function of the Medical Department is to provide consultative services on medical social problems of recipients. From detailed analyses of the services performed by the medical assistance consultants reported in Chapter 50, it appears that in this agency about three fourths of their total time is given to consultation.

The medical care program of this public agency is conceived as an integral part of the health services of the community. Consequently an important aspect of the work of the Medical Department is concerned with effecting co-operation with community agencies. It is estimated from data gathered for this survey and discussed in Chapter 50 that about a third of all the time spent on consultation by the medical social workers in the Cook County Bureau of Public Welfare is given to conferences with outside agencies. These conferences are usually at the request of the outside agencies.

Monthly reports of the work of the medical department are submitted to the Statistical and Research Department of the agency. These are limited to information as to the number of persons in each assistance category who received medical services during the month and the expenditures for such services. No regular reports are made on any other phases of the medical care program.

CHICAGO DEPARTMENT OF WELFARE

The Chicago Department of Welfare is a unit of the government of the city of Chicago whose function is delegated by law and whose funds are provided by appropriations from the Chicago City Council and the state legislature. The latter funds are channeled through the Illinois Public Aid Commission. During 1945 Chicago supplied 60

percent of the money spent by this agency, and the state 40 percent. The state provides the funds required to meet whatever deficiency exists after local levy funds have been exhausted. At the time of this survey the indication was that by the end of 1946 the state would have supplied 50 percent of the funds during the year.

The agency is administered by a commissioner of welfare who is responsible to the mayor of the city of Chicago and the Chicago City Council. Its medical care program is under the direction of a special division, which is one of a number of divisions in the Service Bureau of the Chicago Department of Welfare.

Clients are persons in need of general relief and the members of families eligible for such relief who are living with persons receiving other types of public assistance, such as Old Age Pension, Blind Assistance, and Aid to Dependent Children. Functional supervision of medical care also is maintained for clients of the Veterans' Service and for the Family Division of the Catholic Charity Bureau, for whose support funds are supplied by the state.

ORGANIZATION OF MEDICAL DIVISION The Medical Division is responsible for planning and operating the medical program of the agency. It is administered by a director who is responsible to the director of the Service Bureau. Structurally the division is composed of a number of separate and distinct units. These units function under the supervision of medical social workers assigned by the director to the different units. Among them are the Medical Review Unit, Children's Division Medical Unit, Dental Examining Unit, the Convalescent Home, and the general medical relief program.

The staff of the division consists of the director, who is a medical social worker, seven other medical social workers, ten physicians, two full-time clinic nurses and one part-time nurse, three dentists, one dental aide, five full-time medical aides and one part-time aide, one matron, a purchasing clerk, and ten full-time office personnel.

Appointments to the division are made in accordance with personnel standards and job classifications set up by the personnel department of the agency and subject to the approval of the director of the Medical Division. The director also has authority over dismissals from the staff.

Physicians and dentists serving on the staff of the division are employed on a part-time basis. There are two supervising physicians, eight medical examiners, one supervising dentist, and two dental examiners. In addition, the Convalescent Home employs two part-

time physicians (including the medical director), a nursing staff consisting of four supervising nurses and a number of general duty nurses, and a registered pharmacist.

The director of the Medical Division is administratively responsible for the activities within the division proper and for those of the Medical Review Unit, the Children's Division Medical Unit, and the Dental Examining Unit. She has functional responsibility for the medical program in the Convalescent Home and for the services of the medical social workers assigned to the Veterans' Service and to the Family Division of the Catholic Charity Bureau.

A medical social worker with the title of unit supervisor directs the Medical Review Unit. This unit provides an examining clinic where the applicants' and recipients' ability to work is determined. It is staffed with physicians and clinic nurses. Four medical aides are assigned to this unit to assist in securing sufficient information regarding the medical history of the applicant prior to the time of his examination for a proper work classification by the physician.

Two medical social workers are assigned to the Children's Division case load; one of them serves as supervisor of the Well Children's Clinic program. They have the responsibility of directing and supervising the activities of this clinic, which provides health supervision for children under the care of the Chicago Department of Welfare who are living away from their families. The clinic staff includes two pediatricians and a full-time nurse.

The Dental Examining Unit is under the supervision of a medical social worker who is responsible for the activities of this unit. The work of the unit is concerned with determining the dental needs of recipients and arranging for the recommended treatment. Services rendered by the examining clinic are described in Chapter 37. The dental staff consists of three part-time dentists and a dental aide.

Medical care for clients under the supervision of the Family Division is planned by two medical social workers who serve as consultants to the case workers assigned to this division. These two workers are both administratively and functionally under the jurisdiction of the Medical Division.

The medical social program at the Convalescent Home is in charge of a medical social worker who is under functional supervision of the director of the Medical Division and administratively responsible to the director of the Home. The Convalescent Home, with a capacity of 165 beds, was established in 1937 to meet the need for an

institution where sick and disabled recipients of relief could obtain convalescent care and services which were not available to them in their homes. It is administered by the director of the Institution Division, which is part of the Business Bureau of the Chicago Department of Welfare. The medical staff of the Convalescent Home is on duty four days a week for three hours each day and is available on call at all times. The nursing staff is on duty twenty-four hours a day in shifts of eight hours each. Patients are admitted and discharged from the Convalescent Home only with the approval of the supervising physician.

PLAN OF MEDICAL PROGRAM The medical program of the Chicago Department of Welfare is a continuation of the Medical Relief Service which was established in May 1933 as a division of the Cook County Bureau of Public Welfare. There have of course been changes of emphasis as the relief situation demanded but the structure and general principles have remained essentially the same as in the original plan. The present program provides care for acute illness, chronic illness, and convalescence. Care is rendered through the services of physicians chosen by the recipients from a panel of physicians co-operating in the program; through clinic and hospital services; through provision for necessary drugs and medical appliances prescribed by physicians or by specialized clinics; and, in the case of home nursing, through the services of the Visiting Nurse Association of Chicago.

In addition to provision for the sick, the Medical Division maintains special health services for all clients or for certain groups. A dental examining clinic is available to all clients where the amount and type of dental work needed can be determined and authorized. The recipient selects a dentist to do his work and an assignment for the specified work is given. Periodic examinations are made by the clinic staff to appraise the quality of the dental services rendered. In the Medical Review Unit physicians skilled in judging physical employability examine recipients to determine not only their ability to work but also the possibility of rehabilitation so that they may again be self-supporting. A health supervision program is planned for the children who are living away from their families. Each child is examined regularly in the Well Children's Clinic once or twice a year, depending on his age, and more frequently when considered advisable. The two medical social workers assigned to the clinic program work closely with the Children's Division in arranging for

necessary medical services and for periodic examinations at the Well Children's Clinic.

Provision for medical care.—Medical care is provided for recipients of relief by a panel of physicians who see patients at their offices or at the patients' homes, as the situation requires. Fees are paid by the Chicago Department of Welfare in accordance with a prearranged schedule. Membership on the panel is usually initiated by the physician. Each physician submits an application to the Medical Division, which refers it to a medical advisory committee for recommendation. Clients who had been private patients of a physician before having serious financial reverses which forced them to accept financial aid may wish to have their regular physicians continue to care for them. In such cases the Medical Division gives the physician an opportunity to be listed on the roster, even though he may not want to be used by clients other than his former patients. This practice may account for the large number on the roster. At the time of this survey, according to information obtained from the Chicago Department of Welfare, there were approximately 1,300 practitioners on the panel.

When a patient has no personal physician or when he is unable to reach his regular physician, he is furnished a list of six or eight names of panel physicians. He is instructed to call any one he prefers. This procedure places the responsibility of selection on the patient and incidentally eliminates considerable clerical work in the Medical Division. It also permits the client to have the same relation with his physician as would any paying patient. The only difference is that his bill for medical care is paid by the Chicago Department of Welfare.

The Medical Division reports that the largest concentration of relief clients requiring medical care is in the area south of the central business district where the population is mainly Negro. Many of the panel physicians are Negroes who live or have their offices in this area.

A panel of qualified druggists also is maintained by the Medical Division. As of July, 1946, about four hundred druggists were listed on the roster, each of whom had been approved by the Advisory Committee of the Chicago Retail Druggists Association. Panel druggists are authorized to fill prescriptions for so-called "official" drugs. If any prescription for a relief client calls for an "unofficial" drug, the matter must be referred to the director of the Medical Division, who reviews the case. When circumstances warrant, special authoriza-

tion to fill the prescription is given, but otherwise filling such prescriptions is prohibited. Druggists submit their bills to the Medical Division, which issues checks in payment of services.

Hospital care is provided in the tax-supported institutions and in twelve voluntary hospitals in Chicago. Payment of fees to the hospitals is on the same basis, regardless of whether they are tax-supported or voluntary. The need for hospitalization is determined by the medical staff of the hospital to which the recipient of relief is referred. If the patient objects to referral to Cook County Hospital, then the agency makes an effort to have him admitted to a voluntary hospital. Some maternity cases are referred to the Chicago Maternity Center and are given care in their homes. The general attitude is that the physician on the case handles it in the same way in which he would handle it were the patient one of his regular private patients. Chronically ill patients are given care in Oak Forest Infirmary. Only cases of acute illnesses are referred for hospitalization to Cook County Hospital and the voluntary hospitals to which fees are paid.

Convalescent care is available in the Convalescent Home maintained by the Chicago Department of Welfare. Admission is subject to the approval of the supervising physician at the home. Provision is made for medical and nursing services, physical therapy, and occupational therapy. A medical social worker acts as a liaison officer between the patient and the social work organization, arranging for the necessary hospital, clinic, and dental care and other health or essential living needs. A registered pharmacist in the home fills prescriptions and dispenses drugs as directed by the medical staff.

Because there is no provision for convalescent services to the medically indigent who are the responsibility of Cook County, special arrangements have been made by the Chicago Department of Welfare to admit such persons if they can be physically rehabilitated through services available at the Convalescent Home. The department is reimbursed by Cook County for the cost of care for these persons.

Ambulatory patients are referred for care to the established outpatient facilities in the community. Full use is made of the tax-supported institutions before referral is given to other clinics.

Technical supervision through advisory committees.—From the time this agency was established, it has had the counsel and guidance of medical groups and of other professional groups in allied fields.

At present there are four committees which serve in an advisory capacity on professional aspects of the medical program—three technical committees and one general. These include the Medical Advisory Committee, the Dental Advisory Committee, the Drug Advisory Committee, and the General Health Advisory Committee.

The function of the technical committees is to advise the Medical Division on standards of service and costs of care and to approve applicants for the rosters of qualified persons in each professional field. The General Health Advisory Committee is composed of twelve representative persons who are well acquainted with the community's health and welfare problems. They advise the agency on general policies and procedures and other questions not falling within the jurisdiction of the technical committees.

The Medical Advisory Committee consists of seven general practitioners and an ophthalmologist who are appointed by the council of the Chicago Medical Society. This committee considers various matters involving the medical needs of relief clients. It passes upon the qualifications of physicians offering to serve in the program and gives professional supervision to those who participate in it.

The Dental Advisory Committee consists of three dentists who are appointed by the Chicago Dental Society. They advise on various aspects of the dental program and have given valuable assistance in securing needed facilities for dental services.

The Drug Committee is appointed by the commissioner of welfare from a list submitted by the Chicago Retail Druggists Association. This committee gives technical advice on policies and procedures relating to pharmaceutical practices. It reviews and passes on all applications from pharmacists and acts upon complaints concerning drug-gist participants.

PROCEDURES USED Although the medical program of the Chicago Department of Welfare must be organized within the framework of policies established by the Illinois Public Aid Commission, the Medical Division has full responsibility for both the planning and the administration of the program. Procedures used by the division place emphasis on the consultative function of the staff. Analyses of the regular activities of the medical social workers of this agency indicate that approximately 87 percent of their time is devoted to consultation about the clients or with the individual client. The director of the Medical Division actively participates with other health agencies and with the Council of Social Agencies of Chicago in community planning for improved health services.

AMOUNT OF MEDICAL CARE RENDERED Reports submitted to the surveyor by the Chicago Department of Welfare show that a tremendous amount of medical care is being provided to the recipients of this agency. This care includes visits by physicians, bed care for patients, and outpatient services. Of the 1,300 physicians on the agency's panel, about two hundred physicians are called for service each month. The average number of home visits per month by these physicians is two thousand. At the time of this survey there were approximately twenty thousand persons on the relief rolls of the Chicago Department of Welfare. In terms of the total relief load, it would appear that the amount of medical care rendered monthly would permit a visit by a physician to about 10 percent of the recipients each month. During 1945 the total number of physician-patient visits amounted to 21,982 calls—20,931 visits to patients' homes and 1,051 visits by patients to the physicians' offices.

Bed care for the sick during the same period included 39,184 patient days of care in hospitals and 32,934 days of care in the Convalescent Home. Hospital care was provided in Cook County Hospital and in voluntary hospitals in Chicago—24,312 patient days in the tax-supported institution, and 14,872 in other hospitals.

Persons receiving financial assistance from this agency in 1945 made 85,309 visits to outpatient departments and allied independent clinics in the area. More than 2,450 different medical appliances were provided for recipients. These included artificial eyes, artificial limb supplies and repairs, crutches, glasses, orthopedic appliances and shoes, special supports and trusses, and the like.

A summary of the medical services supplied by the agency during 1945 as reported by the Medical Division is presented in Table 136.

TABLE 136. MEDICAL CARE PROVIDED BY CHICAGO DEPARTMENT OF WELFARE IN CERTAIN SERVICE CATEGORIES AND THE AVERAGE COST PER SERVICE UNIT, 1945

| <i>Type of Service</i> | <i>Amount of Care of Specified Type</i> | <i>Average Cost</i> |
|------------------------------------|---|---------------------|
| Number clinic visits | 85,309 | \$1.00 |
| Number days care—hospital | 39,184 | 4.99 |
| Number days care—Convalescent Home | 32,934 | 3.07 |
| Number calls—physician | 21,982 | 2.00 |
| Number medical appliances | 2,453 | 3.98 |

EXPENDITURES FOR MEDICAL SERVICES The over-all expenditure for medical services by the Chicago Department of Welfare during 1945 amounted to \$539,949. This represents 7.5 percent of the agency's entire disbursements for relief purposes in that year. In

the decade since the Medical Relief Service was transferred from the Cook County Bureau of Public Welfare to the Chicago Department of Welfare 4.3 percent of all relief expenditures has been for medical care—a total of \$9,161,479 throughout the ten-year period. Table 137 shows the disbursements for medical care classified by type of service.

Of the various categories, hospital and clinic care have required the largest expenditures. The record for 1945 shows that the agency paid \$195,363 for 39,184 patient days of care in hospitals. The average cost of this service was \$5.00 per day of care. In the Convalescent Home the average cost per patient day was about \$3.00, and the total expenditures for care during the year amounted to \$101,046.

During the existence of the program \$1,903,252 has been spent by the Welfare Department for outpatient services in outpatient departments of hospitals and allied clinics. The average cost per clinic visit in 1945 was \$1.00—85,309 patient visits at a cost of \$85,310. It is evident from Table 137 that hospital services, convalescent care, and clinic care accounted for about three fourths of the agency's expenditures for medical care at the time of this survey.

TABLE 137. EXPENDITURES FOR CERTAIN TYPES OF SERVICE BY THE MEDICAL DIVISION OF CHICAGO DEPARTMENT OF WELFARE, 1936-45

| TYPES OF SERVICE | EXPENDITURES FOR MEDICAL CARE | |
|--------------------|-------------------------------|----------------------|
| | 1945 | 1936-45 ^a |
| Hospital care | \$195,363 | \$2,578,435 |
| Convalescent Home | 101,046 | 603,029 |
| Clinic care | 85,310 | 1,903,252 |
| Dental care | 47,763 | 603,773 |
| Physicians fees | 44,003 | 1,776,716 |
| Drugs | 19,790 | 864,277 |
| Home nursing | 10,484 | 309,656 |
| Medical appliances | 9,759 | 308,793 |
| Miscellaneous | 26,431 | 229,427 |
| Total | \$539,949 | \$9,177,358 |

^a July 1, 1936-April 1, 1946.

COMMENTS

The Illinois statutes do not permit the use of state funds to provide care for medically needy residents of Chicago and Cicero who are not paupers. These are the only communities in Illinois where state funds may not be made available for the care of medically needy persons. At the present time the responsibility for furnishing services to such persons in Chicago and Cicero is placed on Cook County.

This situation is inequitable, and immediate steps should be taken to have it changed.

A review of the general plans for medical care in public welfare agencies in the area has indicated considerable duplication of effort and lack of integration of welfare services for the medically needy. Consolidation of public medical care facilities would bring about an improvement in the services and a saving of public moneys.

Plans for hospitalization of the medically needy in this area merit careful consideration. Although the policy of using tax-supported institutions for all patients requiring hospital care who are financially unable to provide such care through their own means has certain advantages, the dual system of hospitalization in which both governmental and voluntary hospitals are used at the taxpayers' expense permits more efficient service to the sick poor and is a more economical arrangement. Such a dual system is advocated as a practical plan for the care of the sick poor in this area, and its extension should be encouraged.

RECOMMENDATIONS

It is recommended that:

1. The Board of Commissioners of Cook County in co-operation with representatives of the city and state governments shall investigate the legislative action necessary to make state aid for medical care for persons not paupers available to residents of Chicago and Cicero on the same basis as it is now available in the rest of the state.

2. As soon as possible, public medical care furnished to both pauper and nonpauper residents of the Chicago-Cook County area shall be consolidated under one general administration to prevent duplication of facilities and effort.

3. Pending the effectual consummation of recommendation number one, the County Physicians' Service shall be continued, with certain changes for improved services—these changes to include: (a) staff reorganization so as to remove from the active roll those physicians who are no longer rendering service to the medically needy, (b) staff appointments related to the districts from which the majority of the calls originate, and (c) close integration of the service with the Cook County Hospital; upon consummation of recommendation number one the County Physicians' Service shall be terminated.

HOSPITALS

by *Edward T. Thompson, M.D.*

HOSPITALS AND THEIR SERVICES represent a major and indispensable part of a community's provision for the organized care of the sick. Although they are recognized as essentially public service institutions, the general pattern of their growth and development has been determined largely by philanthropic interests of individuals and groups rather than by the needs of the community. A high level of diagnosis and treatment of the sick has been achieved under the initiative of voluntary effort but with the increasing demands by the public for hospital services it has become evident that intelligent planning for future developments should be based on scientific knowledge of the health needs of the area and the existing facilities to meet them. It was to provide a quantitative description of the hospital facilities in the Chicago-Cook County area and their relation to the community as a whole that this study of organized medical care of the sick was undertaken.

This chapter presents factual information relative to the resources of plant and equipment and their distribution and utilization by the public, and indicates some of the broad problems which must be considered for more effective use of existing facilities and for the establishment of others where they will be of greatest benefit to present and future patients.

Data were obtained from information submitted by the individual hospitals and, in many instances, supplemented by observations made by representatives of the Chicago-Cook County Health Survey on personal visits to the institutions. The desired information was recorded on a series of schedules which were sent to the hospitals or distributed at meetings with members of the survey staff. The schedules included forms previously used in the Illinois Hospital Survey and an additional set prepared especially for this survey.

In the Chicago-Cook County area there are more than three hundred institutions directly concerned with the care of the sick. Among

these are ninety-five hospitals, exclusive of those operated by agencies of the Federal Government, which were not included in the scope of the present inquiry. Institutions other than hospitals are not considered in this chapter. Certain types of hospital facilities also have been excluded from this discussion, although they are used by residents of the area. These are the state institutions for mentally ill and tuberculous patients which are located outside of Cook County. Services for persons suffering from mental diseases or tuberculosis are fully described in Chapters 26, 28, and 29, respectively, and in this chapter discussion is limited to services provided by hospitals within the county.

HOSPITAL FACILITIES IN THE CHICAGO-COOK COUNTY AREA

Hospital facilities in Chicago and Cook County are concentrated in the city of Chicago and in twelve of the other eighty-nine municipalities in the county. There are seventy-six hospitals in Chicago and nineteen in the county exclusive of Chicago. The map on page 1030 shows the location of the ninety-five hospitals and indicates the unevenness of their distribution in the area. The majority of the hospitals are located within a rather small area in Chicago. In some of the densely populated sections, as well as in the rural areas of the county, hospital facilities are either meager or entirely lacking. This situation is especially evident in the northwest section of Chicago, with a population of 226,000, and in the far south and southwest sections which in 1940 had a population of approximately 132,000. It is obvious from even a cursory inspection of the map that there are large areas in the Chicago-Cook County area extending over many square miles in which there is a dearth of hospital facilities.

CLASSIFICATION AND NUMBER OF HOSPITALS On the basis of control or ownership hospitals may be divided into two major categories—government or tax-supported, and nongovernment or non-tax-supported. There are eight government hospitals in the Chicago-Cook County area exclusive of those operated by agencies of the Federal Government. Of these, three are under the control of the state, two under the county, and three under the city. The nongovernment hospitals, eighty-seven in number, may be further divided into two main classifications—the nonprofit group supported by fees from patients, donations, and income from endowment and investments, and the proprietary group operated by individuals and corporations as business enterprises unrestricted as to profit. The

| TYPE OF HOSPITAL | NUMBER OF BEDS | | | |
|-------------------------|----------------|---------|----------|-----------|
| | UNDER 100 | 100-500 | 500-2500 | OVER 2500 |
| General | ● | ● | ● | ● |
| Maternity | ★ | ★ | | |
| Children's | ☆ | ☆ | | |
| Tuberculosis | ◐ | | ◐ | |
| Mental | ▲ | | | ▲ |
| Venereal Disease | | △ | | |
| Eye, Ear, Nose & Throat | ■ | ■ | | |
| Contagious | | ⊕ | | |
| Chronic Disease | | | ⊗ | |

Lake Michigan

nonprofit hospitals include 31 which are operated under the auspices of church organizations and 40 under nonprofit associations. In the proprietary group are 7 hospitals owned and operated by individuals and 9 by corporations.

Chicago has 6 government hospitals, 60 nonprofit, and 10 proprietary hospitals. Cook County outside of Chicago has 2 government, 11 nonprofit, and 6 proprietary hospitals. Table 138 gives the distribution of these hospitals among the different control groups.

On the basis of the type of service provided, hospitals are classified as general or special. General hospitals admit patients for various conditions. Special hospitals restrict their services to particular types of conditions or types of patients. There are 73 general hospitals and 22 specialized hospitals in the area. The latter classification comprises seven separate groups of hospitals, which include 8 institutions for the treatment of mental and nervous diseases, 2 for tuberculosis, 6 for maternity patients, 2 for eye, ear, nose and throat conditions, 2 for children, 1 for contagious diseases, and 1 for venereal diseases.

The general hospitals are most frequently under the control of nonprofit organizations. In this area approximately 4 out of 5 of them are operated under the auspices of church groups or nonprofit associations. Of the 73 general hospitals, 3 are government—1 is controlled by the state and 2 by the county—63 are nonprofit, and 8 are proprietary hospitals.

There are 59 general hospitals located in Chicago and 14 in other municipalities of Cook County. Table 138 shows the distribution of these institutions classified by type of controlling agency. In Chicago 2 of the general hospitals are under government control, 51 under nonprofit organizations, and 6 under proprietary groups. In Cook County exclusive of Chicago 1 general hospital is operated under government auspices, 11 under nonprofit control, and 2 are proprietary.

The large majority of the specialized hospitals in this area also are under the control of nongovernment agencies. Of the 22 specialized hospitals 5 are governmental, 9 are nonprofit, and 8 are proprietary hospitals. Those in Chicago are most frequently nonprofit hospitals, and those in the county exclusive of Chicago, proprietary hospitals. The type of controlling auspices of these specialized institutions is indicated in Table 138, separately for the mental and tuberculosis hospitals and combined for all the others.

SIZE OF HOSPITALS The hospitals differ greatly in size, that is,

TABLE 138. NUMBER OF HOSPITALS CLASSIFIED BY TYPE OF SERVICE AND CONTROL, CHICAGO AND COOK COUNTY

| LOCATION AND TYPE OF SERVICE | TOTAL | TYPE OF CONTROL | | | | | | PROPRIETARY | |
|---------------------------------|-------|-----------------|--------|------|-----------|--------------------------|--|-------------|-------------|
| | | GOVERNMENT | | | NONPROFIT | | | Individual | Corporation |
| | | State | County | City | Church | Nonprofit Association | | | |
| Chicago | | | | | | | | | |
| General | 59 | 1 | 1 | 0 | 21 | 30 | | 2 | 4 |
| Nervous and mental | 4 | 0 | 0 | 0 | 0 | 1 | | 1 | 2 |
| Tuberculosis | 2 | 0 | 0 | 1 | 0 | 1 | | 0 | 0 |
| Special | 11 | 1 | 0 | 2 | 5 | 2 | | 0 | 1 |
| Total | 76 | 2 | 1 | 3 | 26 | 34 | | 3 | 7 |
| Cook County (excluding Chicago) | | | | | | | | | |
| General | 14 | 0 | 1 | 0 | 5 | 6 | | 1 | 1 |
| Nervous and mental | 4 | 1 | 0 | 0 | 0 | 0 | | 2 | 1 |
| Tuberculosis | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| Special | 1 | 0 | 0 | 0 | 0 | 0 | | 1 | 0 |
| Total | 19 | 1 | 1 | 0 | 5 | 6 | | 4 | 2 |

with respect to the number of beds provided for patients. The range in bed capacities is from 5 beds in a small specialized hospital under individual ownership to 4,758 beds in a large state institution. For convenience of comparison the hospitals were classified arbitrarily into eight different size groups, representing bed capacities from under 25 beds to more than 500 beds. Distributions according to the size of the hospitals and their controlling auspices are presented in Table 139.

Approximately two thirds of all the hospitals in the area have bed capacities of 100 or more beds, and relatively few of them have less than 25 beds. The most frequent number provided in these hospitals is 100 to 200 beds, but the number seems to vary with the type of controlling agency. The majority of the government institutions have at least 300 beds, the nonprofit 100 to 300 beds, and the proprietary hospitals less than 50 beds. There are only 18 hospitals in the area with a bed capacity below 50 beds. Of these, 12 are operated by individuals or corporations, 4 by nonprofit associations, and the remaining 2 by church organizations. This relation of size to controlling auspices of the hospitals is clearly shown in Table 139.

Size of the hospital also is associated with the type of medical service provided. The general hospitals usually are larger than the specialized hospitals. In the Chicago-Cook County area all 15 hospitals having 300 or more beds are general hospitals, with three exceptions—one for nervous and mental diseases, one for tuberculosis, and one for contagious diseases. The relative size of the general and specialized hospitals is given in Table 140. In Chicago, 75 percent of the general hospitals and in the county, exclusive of Chicago, 71 percent have a capacity of 100 beds or more. Among the specialized institutions this proportion is much smaller—41 percent in Chicago and 20 percent in the area outside Chicago.

The total bed capacity of the 95 hospitals is 25,802 beds, most of which are concentrated in the large institutions. More than half of them are in the 8 largest institutions (500 or more beds). Conversely, a relatively small proportion are in hospitals having less than 200 beds. The 65 institutions of this size provide less than one fourth of the beds. The total capacity of the 33 smallest hospitals is 1,604 beds—an average of 48.6 beds per institution; of the 32 next larger (100 to 199 beds) it is 4,459 beds—an average of 139.3 beds per institution.

These available beds are about equally divided between govern-

TABLE 139. NUMBER OF HOSPITALS CLASSIFIED BY TYPE OF CONTROL AND SIZE, CHICAGO-COOK COUNTY AREA

| TYPE OF CONTROL | TOTAL | HOSPITALS HAVING SPECIFIED NUMBER OF BEDS | | | | | | | |
|-----------------------|-------|---|-------|-------|-------|---------|---------|---------|--------------|
| | | Under 25 | 25-49 | 50-74 | 75-99 | 100-199 | 200-299 | 300-499 | 500 and Over |
| Government | | | | | | | | | |
| State | 3 | .. | .. | .. | .. | 1 | .. | 1 | 1 |
| County | 2 | .. | .. | .. | .. | .. | .. | .. | 2 |
| City | 3 | .. | .. | .. | .. | .. | 1 | 1 | 1 |
| Total | 8 | .. | .. | .. | .. | 1 | 1 | 2 | 4 |
| Nonprofit | | | | | | | | | |
| Church | 31 | 1 | 1 | 1 | 2 | 14 | 8 | 3 | 1 |
| Nonprofit association | 40 | .. | 4 | 7 | 2 | 16 | 6 | 2 | 3 |
| Total | 71 | 1 | 5 | 8 | 4 | 30 | 14 | 5 | 4 |
| Proprietary | | | | | | | | | |
| Individual | 7 | 5 | 2 | .. | .. | .. | .. | .. | .. |
| Corporation | 9 | 1 | 4 | 1 | 2 | 1 | .. | .. | .. |
| Total | 16 | 6 | 6 | 1 | 2 | 1 | .. | .. | .. |
| Total | 95 | 7 | 11 | 9 | 6 | 32 | 15 | 7 | 8 |

TABLE 140. NUMBER OF HOSPITALS CLASSIFIED BY TYPE OF SERVICE AND SIZE, CHICAGO AND COOK COUNTY

| LOCATION AND TYPE OF SERVICE | TOTAL | HOSPITALS HAVING SPECIFIED NUMBER OF BEDS | | | | | | | |
|------------------------------------|-------|---|-------|-------|-------|---------|---------|---------|--------------|
| | | Under 25 | 25-49 | 50-74 | 75-99 | 100-199 | 200-299 | 300-499 | 500 and Over |
| Chicago and Cook County | | | | | | | | | |
| General | 73 | 4 | 5 | 7 | 3 | 30 | 12 | 6 | 6 |
| Nervous and mental | 8 | 1 | 5 | .. | 1 | .. | .. | .. | 1 |
| Tuberculosis | 2 | .. | .. | 1 | .. | .. | .. | .. | 1 |
| Special | 12 | 2 | 1 | 1 | 2 | 2 | 3 | 1 | .. |
| Total | 95 | 7 | 11 | 9 | 6 | 32 | 15 | 7 | 8 |
| Chicago | | | | | | | | | |
| General | 59 | 2 | 4 | 6 | 3 | 25 | 10 | 4 | 5 |
| Nervous and mental | 4 | 1 | 3 | .. | .. | .. | .. | .. | .. |
| Tuberculosis | 2 | .. | .. | 1 | .. | .. | .. | .. | 1 |
| Special | 11 | 1 | 1 | 1 | 2 | 2 | 3 | 1 | .. |
| Total | 76 | 4 | 8 | 8 | 5 | 27 | 13 | 5 | 6 |
| Cook County (excluding Chicago) | | | | | | | | | |
| General | 14 | 2 | 1 | 1 | .. | 5 | 2 | 2 | 1 |
| Nervous and mental | 4 | .. | 2 | .. | 1 | .. | .. | .. | 1 |
| Tuberculosis | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Special | 1 | 1 | .. | .. | .. | .. | .. | .. | .. |
| Total | 19 | 3 | 3 | 1 | 1 | 5 | 2 | 2 | 2 |

ment hospitals and those under the control of nonprofit organizations. A very small proportion of them are under proprietary auspices (3 percent). Distributions of the number of beds in hospitals according to type of control are shown in Tables 141 and 142. The

TABLE 141. HOSPITAL BED CAPACITY ACCORDING TO TYPE OF CONTROL, CHICAGO-COOK COUNTY AREA

| SIZE OF HOSPITALS (NUMBER OF BEDS) | NUMBER OF BEDS IN HOSPITALS UNDER SPECIFIED CONTROL | | | | | |
|---|---|--------|---------|-------------------|----------------|------------------|
| | HOSPITALS | TOTAL | | GOVERN- MENTAL | NON- PROFIT | PRO- PRIETARY |
| | | Number | Percent | Number | Number | Number |
| Under 25 | 7 | 121 | 0.47 | ... | 20 | 101 |
| 25-49 | 11 | 408 | 1.58 | ... | 173 | 235 |
| 50-74 | 9 | 536 | 2.08 | ... | 478 | 58 |
| 75-99 | 6 | 539 | 2.09 | ... | 361 | 178 |
| 100-199 | 32 | 4,459 | 17.28 | 141 | 4,192 | 126 |
| 200-299 | 15 | 3,724 | 14.43 | 240 | 3,484 | ... |
| 300-499 | 7 | 2,694 | 10.44 | 917 | 1,777 | ... |
| 500 and over | 8 | 13,321 | 51.63 | 11,098 | 2,223 | ... |
| Total | 95 | 25,802 | 100.00 | 12,396 | 12,708 | 698 |

data in Table 141 indicate that, exclusive of beds provided for mentally ill and tuberculous patients, the majority of the beds are in nonprofit hospitals—32 percent in government, 66 percent in nonprofit, and 2 percent in proprietary hospitals.

The seventy-six hospitals in Chicago have a bed capacity of 17,425 beds. Of these, 35 percent are in government hospitals, 62 percent in nonprofit, and 3 percent in proprietary hospitals. In the area outside of Chicago there are 8,377 beds distributed among nineteen hospitals. Approximately 3 out of every 4 of these beds are in government institutions (76 percent); 22 percent are in nonprofit hospitals, and 2 percent in proprietary hospitals.

General hospitals.—The general hospitals in the area range in size from less than 25 beds to more than 3,000 and have a total capacity of 17,447 beds. The average capacity of the 73 general hospitals is 239 beds—237 in Chicago and 246 in the county outside Chicago. A large proportion of these beds are in the 6 largest hospitals (500 or more beds).

As previously noted, the major part of the general hospital service in Chicago and in the county exclusive of Chicago is provided by nonprofit organizations. Approximately two thirds of the available beds are in the nonprofit hospitals. The proportionate distribution of general hospital beds among the three types of controlling agencies is given in Table 142 for the area as a whole and separately for Chi-

TABLE 142. HOSPITAL BED CAPACITY ACCORDING TO TYPE OF HOSPITAL SERVICE AND CONTROL,
CHICAGO AND COOK COUNTY

| LOCATION TYPE OF SERVICE | HOSPITALS | TOTAL BEDS | NUMBER OF BEDS IN HOSPITALS UNDER SPECIFIED CONTROL | | | |
|-----------------------------|-----------|------------|---|------------|-----------|------------|
| | | | GOVERNMENT | | NONPROFIT | |
| | | | Number | Percentage | Number | Percentage |
| Chicago and Cook County | | | | | | |
| General | 73 | 17,447 | 5,346 | 30.6 | 11,706 | 67.1 |
| Nervous and mental | 8 | 5,062 | 4,758 | 94.0 | 41 | .8 |
| Tuberculosis | 2 | 1,545 | 1,483 | 96.0 | 62 | 4.0 |
| Maternity | 6 | 598 | | | 593 | 99.2 |
| Eye, ear, nose, throat | 2 | 176 | 141 | 80.1 | | .8 |
| Children's | 2 | 306 | | | 306 | 100.0 |
| Contagious ^a | 2 | 668 | 668 | 100.0 | | |
| Total | 95 | 25,802 | 12,396 | 48.0 | 12,708 | 49.3 |
| Chicago | | | | | 698 | 2.7 |
| General | 59 | 13,992 | 3,764 | 26.9 | 9,871 | 70.5 |
| Nervous and mental | 4 | 145 | | | 41 | 28.3 |
| Tuberculosis | 2 | 1,545 | 1,483 | 96.0 | 62 | 4.0 |
| Maternity | 5 | 593 | | | 593 | 100.0 |
| Eye, ear, nose, throat | 2 | 176 | 141 | 80.1 | | |
| Children's | 2 | 306 | | | 306 | 100.0 |
| Contagious ^a | 2 | 668 | 668 | 100.0 | | |
| Total | 76 | 17,425 | 6,056 | 34.8 | 10,873 | 62.4 |
| Cook County | | | | | 496 | 2.8 |
| General | 14 | 3,455 | 1,582 | 45.8 | 1,835 | 53.1 |
| Nervous and mental | 4 | 4,917 | 4,758 | 96.8 | | |
| Maternity | 1 | 5 | | | | |
| Total | 19 | 8,377 | 6,340 | 75.7 | 1,835 | 21.9 |
| | | | | | 202 | 2.4 |

^a Includes one hospital for venereal diseases.

cago and for the rest of the county. In Chicago 71 percent of the beds are under nonprofit control, and in the county exclusive of Chicago 53 percent.

General hospitals under government control are all large. The three in this area account for 31 percent of the bed capacity of the general hospitals. The smallest of the government institutions has a capacity of 489 beds and the largest 3,275 beds; both are located in Chicago. The average bed capacity of the sixty-two nonprofit general hospitals is 188.8 beds per institution; of the eight proprietary, 49.4 beds. Only nine of the nonprofit group have as many as 300 beds and none of the proprietary group is as large.

Special hospitals.—The twenty-two specialized hospitals in the Chicago-Cook County area have a combined bed capacity of 8,355 beds. These include eight institutions for nervous and mental diseases, with 5,062 beds, and two for tuberculosis, with a capacity of 1,545. One of the mental and one of the tuberculosis hospitals are under the control of government agencies. The large majority of the beds are concentrated in these two institutions—4,758 beds in the governmental hospital for mentally ill patients and 1,483 in that for tuberculous patients.

In Table 142 the bed capacities of the specialized hospitals according to the type of auspices under which they operate are shown. It will be noted that 94 percent of the beds for mental diseases are in a government hospital and 96 percent of those for tuberculosis. Non-government hospitals for these conditions provide a very small proportion of the beds, their capacities ranging from less than 25 to less than 100 beds.

In Chicago there are no government institutions for the mentally ill. Care for these patients is provided mainly by small proprietary hospitals—28 percent of the beds for mental patients are in nonprofit hospitals, and 72 percent of them, in proprietary institutions. They have a total capacity of 145 beds. There are two tuberculosis hospitals, one of which is a large government institution and one a small nonprofit institution (62 beds).

Cook County outside Chicago has four institutions for nervous and mental diseases; one of them is under government control, and three are under proprietary auspices. The latter group has a combined capacity of 159 beds.

The specialized hospitals, exclusive of ten for the mentally ill and tuberculous, have a bed capacity of 1,748 beds. Only one of these

special hospitals has as many as 300 beds, and one fourth of them have less than 50 beds per institution. The former is a hospital for contagious diseases, and the latter group includes one for eye, ear, nose, and throat diseases, and two for maternity patients.

More than half the 1,748 beds in special hospitals are under the control of nonprofit organizations (899 beds). All these restrict services to either maternity patients or children. Only 40 beds are available in the proprietary special hospitals—35 for eye, ear, nose, and throat diseases and 5 beds for maternity patients. The remaining beds are in government institutions—141 beds in a state hospital for eye, ear, nose, and throat diseases and 668 beds in two city hospitals for contagious and venereal diseases.

It should be noted that many of the conditions treated in these specialized hospitals are cared for in the general hospitals also. The combined facilities provided for various types of needs are discussed later in this chapter.

TYPE OF ACCOMMODATIONS Hospital accommodations were classified on the basis of number of beds per room as private, semi-private, and ward. All rooms having more than two beds were considered wards. In the Chicago-Cook County area approximately two out of every three hospital beds are in wards. The size of these wards ranges from 3 to more than 20 beds per room. More than half the beds are in wards having at least 5 beds to the room. Of the total 25,802 beds, 21 percent are in wards of 8 or more beds, 47 percent in smaller wards, 18 percent in semiprivate rooms, and 14 percent in private rooms.

In Chicago the percentage of hospital beds in private and semi-private rooms is higher than that in the county exclusive of Chicago—40 percent of the accommodations in Chicago and 16 percent in the county outside Chicago are in these categories. There are 2,926 beds in private rooms in Chicago, 17 percent of the bed capacity of the hospitals, and 4,062 beds in semiprivate rooms, or 23 percent of the total. A relatively small proportion of the beds are in the three- or four-bed rooms—14 percent. In the area outside Chicago there are approximately the same number of beds in private service, semi-private, and three- or four-bed rooms—667, 688, and 628 beds, respectively.

Table 143 shows the type of accommodations in the general and the specialized hospitals. It will be observed from these figures that accommodations in general hospitals follow a pattern similar to that

TABLE 143. DISTRIBUTION OF BEDS ACCORDING TO TYPE OF SERVICE AND TYPE OF HOSPITAL ACCOMMODATIONS,
CHICAGO AND COOK COUNTY^a

| LOCATION AND TYPE OF HOSPITAL SERVICE | TOTAL ROOMS | NUMBER OF ROOMS HAVING SPECIFIED NUMBER OF BEDS | | | | | | | | |
|--|----------------|---|-------|-----|-----|-----|----|----|-----|------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 and Over |
| Chicago and Cook County | | | | | | | | | | |
| General ^a | 6,401 | 3,257 | 2,034 | 335 | 418 | 84 | 73 | 27 | 50 | 123 |
| Nervous and mental | 224 | 96 | 57 | 17 | 3 | 3 | | | 2 | 46 |
| Tuberculosis | 410 | 194 | 114 | 18 | 6 | 4 | 6 | 1 | 16 | 51 |
| Special | 401 | 46 | 170 | 53 | 39 | 9 | 18 | 3 | 36 | 27 |
| Total | 7,436 | 3,593 | 2,375 | 423 | 466 | 100 | 97 | 31 | 104 | 247 |
| Chicago | | | | | | | | | | |
| General ^a | 5,233 | 2,666 | 1,726 | 291 | 298 | 66 | 59 | 25 | 44 | 58 |
| Nervous and mental | 63 | 20 | 22 | 14 | 2 | 3 | | | 2 | |
| Tuberculosis | 410 | 194 | 114 | 18 | 6 | 4 | 6 | 1 | 16 | 51 |
| Special | 399 | 46 | 169 | 52 | 39 | 9 | 18 | 3 | 36 | 27 |
| Total | 6,105 | 2,926 | 2,031 | 375 | 345 | 82 | 83 | 29 | 98 | 136 |
| Cook County (excluding Chicago) | | | | | | | | | | |
| General | 1,168 | 591 | 308 | 44 | 120 | 18 | 14 | 2 | 6 | 65 |
| Nervous and mental | 161 | 76 | 35 | 3 | 1 | | | | | 46 |
| Special | 2 | | 1 | 1 | | | | | | |
| Total | 1,331 | 667 | 344 | 48 | 121 | 18 | 14 | 2 | 6 | 111 |

^a Excludes one general state hospital of 489 beds and part of one general nonprofit hospital of 135 beds because of omissions in data reported.

of the total institutions in the area. The largest proportion of beds are in wards. Distribution of the 17,447 general hospital beds among four categories of accommodations shows: 19 percent of the beds in private rooms; 23 percent of the beds in semiprivate rooms; 15 percent of the beds in three- or four-bed wards; 43 percent of the beds in five-bed or larger wards.

Comparisons of hospital accommodations in Chicago with those in New York City indicate that a much higher percentage of beds in Chicago are used for private or semiprivate services and a correspondingly lower percentage for ward services than in New York. The Hospital Survey for New York¹ reported 8.4 percent of the beds in private service, 8.0 percent in semiprivate, and 83.6 percent in ward service. Although the bases of classification were not the same in the two surveys, the differences noted are particularly interesting in that allocation of beds among the three services in the New York study was in terms of their primary use by the hospitals which sometimes classed three or four beds in a room as semiprivate service rather than as ward accommodations. Under these conditions it would seem likely that the actual differences between the two cities with respect to the proportion of beds in private or semiprivate service are even greater than the figures cited here indicate.

FACILITIES FOR VARIOUS MEDICAL SERVICES The number of beds reported in special hospitals does not represent the total number of beds provided for the different types of medical service. For example, the bed capacity of the six maternity hospitals is 598, but this is not the entire number of beds available for maternity patients in this area, since most of the general hospitals allocate beds for obstetric cases. For an accurate description of the existing facilities the specific assignment of beds to the different services should be known. A detailed summary of the bed capacity for various types of needs is presented in Table 144 in terms of the controlling auspices of the hospital. The findings are shown separately for Chicago and the county outside Chicago.

On the basis of the actual use to which the 25,802 beds are assigned, it is evident from the table that about half of the beds are available for general medical and surgical care. Briefly summarized, the outstanding facts regarding the allocation of beds are as follows: 5,582 beds for nervous and mental diseases; 2,838 beds for maternity

¹ The United Hospital Fund of New York, *Hospital Survey for New York*, New York, II (1937), 127.

TABLE 144. DISTRIBUTION OF HOSPITAL BEDS ACCORDING TO NUMBER ALLOTTED TO SPECIFIC MEDICAL SERVICE AND TYPE OF HOSPITAL CONTROL, CHICAGO AND COOK COUNTY

| LOCATION AND TYPE OF SERVICE | BEDS ALLOTTED IN HOSPITALS UNDER SPECIFIED TYPE OF CONTROL | | | |
|------------------------------------|---|-------------------|------------------|--------------------|
| | <i>Total</i> | <i>Government</i> | <i>Nonprofit</i> | <i>Proprietary</i> |
| Chicago and Cook County | | | | |
| General medical | 2,131 | 812 | 1,317 | 2 |
| General surgical | 2,441 | 688 | 1,753 | ... |
| Obstetrical | 2,838 | 280 | 2,457 | 101 |
| Pediatric | 1,876 | 482 | 1,388 | 6 |
| Contagious | 624 | 558 | 66 | ... |
| Tuberculosis | 2,476 | 2,397 | 79 | ... |
| Nervous and mental | 5,582 | 5,194 | 125 | 263 |
| Chronic | 1,097 | 1,008 | 89 | ... |
| Venereal diseases | 250 | 250 | ... | ... |
| Orthopedic | 580 | 210 | 370 | ... |
| Eye, ear, nose, throat | 414 | 292 | 82 | 40 |
| Skin and cancer | 63 | 50 | 13 | ... |
| Unassigned | 5,430 | 175 | 4,969 | 286 |
| Total | 25,802 | 12,396 | 12,708 | 698 |
| Chicago | | | | |
| General medical | 1,931 | 812 | 1,117 | 2 |
| General surgical | 2,159 | 688 | 1,471 | ... |
| Obstetrical | 2,367 | 280 | 1,999 | 88 |
| Pediatric | 1,755 | 482 | 1,267 | 6 |
| Contagious | 597 | 558 | 39 | ... |
| Tuberculosis | 1,902 | 1,823 | 79 | ... |
| Nervous and mental | 665 | 436 | 125 | 104 |
| Chronic | 89 | ... | 89 | ... |
| Venereal diseases | 250 | 250 | ... | ... |
| Orthopedic | 491 | 210 | 281 | ... |
| Eye, ear, nose, throat | 394 | 292 | 62 | 40 |
| Skin and cancer | 55 | 50 | 5 | ... |
| Unassigned | 4,770 | 175 | 4,339 | 256 |
| Total | 17,425 | 6,056 | 10,873 | 496 |
| Cook County (excluding Chicago) | | | | |
| General medical | 200 | ... | 200 | ... |
| General surgical | 282 | ... | 282 | ... |
| Obstetrical | 471 | ... | 458 | 13 |
| Pediatric | 121 | ... | 121 | ... |
| Contagious | 27 | ... | 27 | ... |
| Tuberculosis | 574 | 574 | ... | ... |
| Nervous and mental | 4,917 | 4,758 | ... | 159 |
| Chronic | 1,008 | 1,008 | ... | ... |
| Orthopedic | 89 | ... | 89 | ... |
| Eye, ear, nose, throat | 20 | ... | 20 | ... |
| Skin and cancer | 8 | ... | 8 | ... |
| Unassigned | 660 | ... | 630 | 30 |
| Total | 8,377 | 6,340 | 1,835 | 202 |

patients; 2,476 beds for tuberculosis; 1,876 beds for children; 1,097 beds for chronic diseases; 624 beds for contagious diseases; 11,309 beds for all other services.

With respect to control or ownership, the government institutions in the area provide the major part of the facilities assigned to nervous and mental diseases, tuberculosis, contagious diseases, and chronic diseases. A relatively small proportion of beds in nongovernment hospitals are allotted to any of these services. Most of the unassigned beds and those used for general medical care and for maternity patients and children are in hospitals under the auspices of nonprofit organizations.

The generally accepted method of determining the relation of hospital facilities to the needs of a community is to compare the number of hospital beds available with the total population of the area. Chicago has 17,425 beds, and the county exclusive of Chicago, 8,377 beds. On the basis of the 1940 census figures these bed capacities provide 5.1 beds per 1,000 persons in Chicago and 12.5 beds per 1,000 in the area outside Chicago. The ratios serve to indicate the combined hospital facilities in this area for all purposes. They do not, however, give sufficient information from which to determine the adequacy of existing facilities to meet the needs of the community. A number of factors are involved in the bed requirements of an area. Among them are accessibility of the facilities, types of service available, and certain characteristics of the population.

The general distribution of hospital beds is very uneven throughout the area. Facilities are completely lacking in some sections of Chicago and of the county outside Chicago and are meager in other sections. Of the 75 community areas in Chicago, 38 are without hospital facilities and others have only those restricted to specialized services or types of patients. The same conditions exist in other municipalities in the county. This situation is complicated further by the fact that most of the hospital beds are concentrated in a relatively few very large institutions.

In the analyses which follow, the adequacy of the bed ratios for different services will be considered. Since the facilities for the care of nervous and mental diseases, tuberculosis, and venereal diseases and for the chronically ill are reviewed in other chapters, they are excluded from this discussion.

Facilities for general medical services.—Acute general illnesses comprise the major needs for which hospital care is required. Of the

25,802 beds in the area, 16,023 are allotted to general medical and surgical service. This number includes beds for maternity, pediatrics, orthopedic, eye, ear, nose, and throat conditions, skin diseases, and venereal diseases. It excludes those assigned to nervous and mental diseases, tuberculosis, contagious diseases, and chronic diseases. The bed ratios for general care are 4.1 per 1,000 population in Chicago and 2.8 in the area outside Chicago. These ratios are based on the number of beds assigned to the services specified.

The extent to which these beds meet the needs in this area is discussed in another section of this chapter. Demand and need for hospital beds are influenced by many local conditions, and although a ratio of 4 beds for acute illnesses per 1,000 population is usually accepted as adequate it is not considered sufficient for this area. Evidence given in Table 152 shows that to meet the present needs Chicago requires at least 5 beds per thousand persons and the county outside Chicago 7 beds.

Facilities for acute communicable diseases.—In the Chicago-Cook County area, there are 624 beds assigned to the care of acute communicable diseases, a ratio of 1.5 beds per 10,000 population. A ratio of 5 beds per 10,000 population has generally been considered desirable for the care of communicable diseases. In the absence of epidemics and at the current low rate of these diseases, this ratio is too large. These facts together with the success of home care supplemented by the services of visiting nurses make the usually accepted ratio untenable. In New York's hospital survey it was determined that for the metropolitan area 1.4 beds per 10,000 population was adequate.

On the basis of the usual ratio of 5 beds per 10,000 population the Chicago-Cook County area should have 2,030 beds. The low occupancy percentage of the two government hospitals for acute communicable diseases for the past five years amply justifies the adequacy of the beds now available. In fact, the reduction of these beds by 168 by closing the contagious unit at Cook County Hospital is to be encouraged.

Similarly, the Isolation Hospital for smallpox operated by the Chicago Health Department as a separate unit of the Municipal Contagious Disease Hospital is no longer needed. Smallpox patients can be cared for in the main unit or in any general hospital. The fact that only six patients have been admitted to the Isolation Hospital

during the five-year period 1941-45 is further evidence of the advisability of closing this unit.

With increased knowledge, medical aseptic techniques, and better nursing care for the control of cross infections, the need for special facilities for communicable diseases is no longer present. Such diseases can be cared for adequately in general hospitals. The development of facilities in general hospitals for the care of patients with communicable diseases should offset amply the reduction in available beds necessitated by the closure of the contagious disease units recommended as a result of the survey.

It is believed that the present trend in acceptance of acute communicable diseases by general hospitals will increase progressively in the near future. The advantage to be gained by the general hospitals from the admission of these patients is great. Through such acceptance and treatment a medical aseptic technique consciousness will develop which should be beneficial to all concerned.

Facilities for the general care of children.—There are in the area 1,876 beds assigned to the general care of children. Of these, 1,755 beds are in Chicago and 121 in the area outside Chicago. Usually it is assumed that 5 beds per 10,000 population is sufficient to meet the needs of children for all general medical and surgical care. On the basis of this ratio it is estimated that 1,698 beds are required in Chicago and 333 beds in the county exclusive of Chicago, or a total of 2,031 beds for children. These estimates are considered to be conservative, since they are calculated on 1940 census data and have not taken into account the increases in population during the past five years or the continued growth expected for this area. The expected ratio of growth in population and certain characteristics of the child population of this area are discussed in Chapter 23.

At the present time Chicago appears to have ample provision for the general care of children. Facilities in the county outside Chicago are, however, decidedly inadequate to meet their needs.

Facilities for maternity patients.—At the time of this survey (June, 1946) there were in the Chicago-Cook County area 2,838 beds allotted to the care of maternity patients—2,367 in Chicago and 471 beds in the county exclusive of Chicago. Most of these beds were in general hospitals—79 percent.

The large majority of the facilities for maternity patients are under the auspices of nonprofit organizations: 86 percent of the beds

in nonprofit hospitals, 10 percent in government hospitals, and 4 percent in proprietary hospitals. Approximately two out of every three beds available for obstetric services are in general hospitals operated by nonprofit organizations (See Tables 142 and 144).

The number of beds required for the care of maternity patients will depend upon the number of births occurring in hospitals, the length of stay in the hospital, and the occupancy rates of the beds assigned for obstetric services. In 1945 there were 73,458 births in the Chicago-Cook County area, of which 69,828 births, or 95 percent, occurred in hospitals. On the basis of a ten-day stay and 75-percent occupancy of each bed during the year, each obstetric bed can be used for 27 births yearly. Under these conditions present facilities in the area can provide care for a total of 76,630 births—63,910 in Chicago and 12,720 in the county outside Chicago.

The percentage of births occurring in hospitals in this area has remained fairly constant during the past few years. In 1943 the Chicago-Cook County area had the highest birth rate in twenty-five years, 20.3 per 1,000 population. During that year 95 percent of the live births and 89 percent of the stillbirths occurred in hospitals, as did 95 percent of the live births and 86 percent of the stillbirths during 1945.

There were 60,777 births in Chicago in 1945; 57,358 of them were in hospitals. As approximately 1 percent of all deliveries in the area are multiple births the number of obstetric beds required for maternity patients would be correspondingly reduced. It is estimated that the available beds can care for 63,910 single births, which would indicate that the existing facilities for obstetric services are sufficient to meet the present needs in Chicago. Data for 1946 from the Chicago Health Department show a very large increase over 1945 in the number of births. During 1946 there were 73,831 live births, 95 percent of them occurring in hospitals. This number of births is considered abnormally high and not likely to be maintained. In view of the general acceptance by the public and medical profession of a hospital stay of less than ten days for maternity cases, the available hospital beds are probably adequate to meet the demands of the community.

In Cook County exclusive of Chicago the total births in 1945 were 12,681; 12,470, or 98 percent of them occurred in hospitals. On the basis of a stay of ten days in the hospital by each maternity patient, the 471 obstetric beds in the area should be sufficient to meet the

needs of the population. A large enough number of bassinets are associated with the obstetric beds in the area to provide adequately for newborn infants.

No cognizance has been taken of the effect of the early ambulation theory on the number of patients that an obstetric bed may serve in the course of a year. A reduction in the average hospital stay of a maternity patient from ten days to eight days would permit a hospital bed to serve 33 maternity patients per year instead of 27. On this basis, the potential capacity of the facilities in the Chicago-Cook County area would be 93,650 deliveries.

Although the number of obstetric beds is considered to be adequate for the area it should be recognized that not all hospitals are equally popular with patients. Some hospitals may be overcrowded with maternity patients, while others may not be utilized to full capacity. These and other local conditions, including the closed medical staffs of some institutions, are complicating factors in an appraisal of the existing facilities and their use.

USE OF HOSPITAL FACILITIES

A significant indication of the adequacy of existing hospital facilities is the extent to which they are used. In this survey extent of use has been determined from hospital reports regarding the number of persons receiving care during 1945, the average length of the stay in the hospital, and the percentage of beds occupied. Information was obtained from 93 of the 95 hospitals in the area relative to each of these conditions. The findings are summarized in Tables 145-152.

NUMBER OF INPATIENTS AND DAYS OF CARE The volume of service rendered by the hospitals in Chicago and Cook County is reflected in the number of patients and the number of days of service given to them. During 1945 a total of 444,920 persons, exclusive of newborn infants, received 7,281,948 patient days of care. A patient day represents twenty-four hours of care received by one patient.

Government hospitals in the area reported 17 percent of the patient load and approximately half the patient days of care—3,564,037 days of care to 74,394 patients. Exclusive of the services for mentally ill, tuberculous, and chronic patients, 926,312 days of care were provided by government hospitals. This amount of service constitutes 12.7 percent of the total patient days of care. It would follow from these figures that one day in every eight days of care rendered by hos-

TABLE 145. NUMBER OF PATIENTS DISCHARGED DURING 1945
ACCORDING TO TYPE OF HOSPITAL SERVICE AND CONTROL,
CHICAGO AND COOK COUNTY^{a b}

| LOCATION AND TYPE OF SERVICE | NUMBER PATIENTS IN HOSPITALS UNDER SPECIFIED CONTROL | | | |
|-------------------------------------|--|--------------------|------------------|--------------------|
| | <i>Total</i> | <i>Government</i> | <i>Nonprofit</i> | <i>Proprietary</i> |
| Chicago and Cook County | | | | |
| General | 420,727 | 60,257 | 346,488 | 13,982 |
| Nervous and mental | 2,844 | 1,245 | 219 | 1,380 |
| Tuberculosis | 1,580 | 1,419 | 161 | ... |
| Maternity | 3,820 | ... | 3,702 | 118 |
| Eye, ear, nose, throat | 3,973 | 3,187 | ... | 786 |
| Children's | 3,690 | ... | 3,690 | ... |
| Contagious and venereal diseases | 8,286 | 8,286 | ... | ... |
| Total | 444,920 | 74,394 | 354,260 | 16,266 |
| Chicago | | | | |
| General | 356,277 | 59,095 | 283,763 | 13,419 |
| Nervous and mental | 826 | ... | 219 | 607 |
| Tuberculosis | 1,580 | 1,419 | 161 | ... |
| Maternity | 3,702 | ... | 3,702 | ... |
| Eye, ear, nose, throat | 3,973 | 3,187 | ... | 786 |
| Children's | 3,690 | ... | 3,690 | ... |
| Contagious and venereal diseases | 8,286 | 8,286 | ... | ... |
| | 378,334 | 71,987 | 291,535 | 14,812 |
| Cook County (excluding Chicago) | | | | |
| General | 64,450 | 1,162 ^c | 62,725 | 563 |
| Nervous and mental | 2,018 | 1,245 | ... | 773 |
| Maternity | 118 | ... | ... | 118 |
| Total | 66,586 | 2,407 | 62,725 | 1,454 |

^a Does not include newborn infants.

^b Data from 94 hospitals; 1 general hospital omitted.

^c Chronically ill and tuberculous patients only.

pitals in the area was for a patient in a tax-supported institution for ailments other than mental diseases, tuberculosis, and chronic illness.

Service in general hospitals under all types of control was provided for 420,727 patients. The average length of stay in these hospitals was 10.1 days per patient. Expressed in terms of the population, one person in every nine in the Chicago-Cook County area spent ten days in a general hospital during 1945. Approximately three fourths of the days of care in general hospitals were provided by hospitals under the auspices of nonprofit organizations. The proportionate distribution of the 4,266,553 days of care in general hospitals under various types of control was as follows:

| <i>Types of Hospitals</i> | <i>Percentage of Patient Days of Care</i> |
|---------------------------|---|
| Government | |
| State | 2.9 |
| County | 16.1 |
| Nonprofit | |
| Church | 36.2 |
| Nonprofit association | 42.3 |
| Proprietary | |
| Individual | .2 |
| Corporation | 2.3 |
| All general hospitals | 100.0 |

TABLE 146. NUMBER OF PATIENT DAYS OF CARE DURING 1945
ACCORDING TO TYPE OF HOSPITAL SERVICE AND CONTROL,
CHICAGO AND COOK COUNTY^{a b}

| LOCATION AND TYPE OF SERVICE | NUMBER OF DAYS IN HOSPITAL UNDER SPECIFIED CONTROL | | | |
|-------------------------------------|--|----------------------|------------------|--------------------|
| | <i>Total Patient Days</i> | <i>Government</i> | <i>Nonprofit</i> | <i>Proprietary</i> |
| Chicago and Cook County | | | | |
| General | 4,838,105 | 1,383,618 | 3,348,336 | 106,151 |
| Nervous and mental | 1,774,098 | 1,688,125 | 9,685 | 76,288 |
| Tuberculosis | 392,648 | 378,048 | 14,600 | ... |
| Maternity | 97,665 | ... | 96,457 | 1,208 |
| Eye, ear, nose, throat | 35,776 | 32,061 | ... | 3,715 |
| Children's | 61,471 | ... | 61,471 | ... |
| Contagious and venereal diseases | 82,185 | 82,185 | ... | ... |
| Total | 7,281,948 | 3,564,037 | 3,530,549 | 187,362 |
| Chicago | | | | |
| General | 3,715,273 | 812,066 | 2,801,392 | 101,815 |
| Nervous and mental | 43,265 | ... | 9,685 | 33,580 |
| Tuberculosis | 392,648 | 378,048 | 14,600 | ... |
| Maternity | 96,457 | ... | 96,457 | ... |
| Eye, ear, nose, throat | 35,776 | 32,061 | ... | 3,715 |
| Children's | 61,471 | ... | 61,471 | ... |
| Contagious and venereal diseases | 82,185 | 82,185 | ... | ... |
| Total | 4,427,075 | 1,304,360 | 2,983,605 | 139,110 |
| Cook County (excluding Chicago) | | | | |
| General | 1,122,832 | 571,552 ^c | 546,944 | 4,336 |
| Nervous and mental | 1,730,833 | 1,688,125 | ... | 42,708 |
| Maternity | 1,208 | ... | ... | 1,208 |
| Total | 2,854,873 | 2,259,677 | 546,944 | 48,252 |

^a Does not include newborn infants.

^b Data from 93 hospitals; 2 general hospitals omitted.

^c Chronically ill and tuberculous patients only.

Specialized hospitals rendered 3,015,395 days of care to 25,355 patients. The average length of stay during the year was four months—119 days per patient. These figures include services for chronic, mentally ill, and tuberculous patients. This total represents 41 percent of the patient days of care provided by hospitals in the area.

A summary of data obtained from 74 Chicago hospitals and 19 in the area outside Chicago with respect to the number of inpatients discharged, including those who died in the institution during 1945, is presented in Table 145. The figures indicate that in relation to the 1940 population and exclusive of patients in institutions for mental diseases and tuberculosis, one person in eleven in Chicago received hospital care during 1945. In Cook County outside Chicago this proportion was one person in ten.

The days of care given by the different types of hospital are shown in Table 145. Hospitals in Chicago provided a total of 4,427,075 days of care, which if equally distributed would amount to more than a day of hospital care for every person in the community. Institutions in the county outside Chicago provided 2,854,873 patient days of care. More than half this care was given by institutions for the mentally ill. If the amount of care rendered by these special institutions were excluded, the remaining volume of service would be sufficient to provide approximately a day and a half of hospital care to every person in Cook County exclusive of Chicago.

SERVICES ACCORDING TO PATIENTS' PAY STATUS Complete information regarding the number of patients who paid for the hospital care they received in 1945 was not available for this survey. Days of care according to the source of payment for services rendered were obtained from 42 of the 87 nongovernment institutions. As these provided more than half the total amount of inpatient services given in nongovernment hospitals, the data available were considered sufficient to indicate the general situation in the area.

Hospital patients were classified according to pay status as, (1) those who paid for services directly or through a prepaid hospital plan, (2) those whose hospital expenses were paid by governmental agencies from federal, state, county, or city funds, and (3) nonpaying patients for whose care the hospital rendered no bills. Table 147 shows the number of patients in each classification and the days of care they received.

The large majority of the patients who received care in the forty-two nongovernment hospitals paid for the services. Payment for 88

TABLE 147. PAY STATUS OF PATIENTS IN 42 NONGOVERNMENT HOSPITALS
ACCORDING TO NUMBER DISCHARGED AND PATIENT DAYS OF CARE,
CHICAGO-COOK COUNTY AREA, 1945

| <i>Pay Status and Source of Payment</i> | <i>Number Hospitals</i> | <i>Number Patients Discharged</i> | <i>Number Days of Care</i> | <i>Percent of Days of Care</i> |
|---|-----------------------------|---|------------------------------------|--|
| Full or part-pay by: | | | | |
| Patient or hospital plan | 42 | 180,021 | 1,922,202 | 88.1 |
| Federal funds | 8 | 749 | 8,150 | .4 |
| State funds | 16 | 1,572 | 12,997 | .6 |
| County funds | 4 | 147 | 1,122 | .1 |
| City funds | 10 | 1,130 | 16,004 | .7 |
| Non-pay | 32 | 10,864 | 220,360 | 10.1 |
| Total | 42 | 194,483 | 2,180,835 | 100.0 |

percent of the days of care rendered was made by the patient directly or through the Blue Cross Plan for Hospital Care or some other pre-paid hospital plan. Services for which government agencies paid accounted for a very small proportion of the hospital care given—less than 2 percent. For 10 percent of the days of care rendered by these hospitals no compensation was received.

EXTENT OF USE OF HOSPITAL BEDS Utilization of the bed capacity of a hospital is shown by the percentage of beds occupied during a specified period of time. This percentage is termed an occupancy rate and represents the ratio of the number of beds occupied by patients during a year to the total number of beds available. If the occupancy rate of a hospital is 80 percent, the average use of its bed capacity is eight out of every ten beds.

In 1945 the average occupancy rate of the hospitals in the area was 77.9 percent—in Chicago 70.4 percent, in Cook County exclusive of Chicago 93.4 percent. These averages are lower than those reported for this area by the American Medical Association, since they include findings from all the hospitals and the data collected by the American Medical Association are restricted to registered hospitals.

Among a number of factors which may influence the occupancy rate of a hospital, size and type are of prime importance. Generally it may be assumed that the smaller the hospital the lower will be its normal occupancy rate. Small institutions in order to operate satisfactorily and also meet professional standards must provide for a greater reserve of vacant beds than the larger institutions. The average occupancy rates of the hospitals of various sizes in Chicago and Cook County are given in Table 148 according to the relative size and the type of hospital service. It will be observed from the table that in hospitals with less than fifty beds the percentages of occupancy

TABLE 148. PERCENTAGE OF BEDS OCCUPIED BY TYPE, OF HOSPITAL SERVICE AND SIZE,
CHICAGO AND COOK COUNTY, 1945

| LOCATION AND TYPES OF HOSPITAL SERVICE | PERCENTAGE OCCUPANCY BY SPECIFIED BED CAPACITY OF HOSPITAL ^a | | | | | | | | | |
|---|---|----------|-------|-------|-------|---------|---------|---------|--------------|--|
| | Total | Under 25 | 25-49 | 50-74 | 75-99 | 100-199 | 200-299 | 300-499 | 500 and Over | |
| Chicago and Cook County | | | | | | | | | | |
| General | 77.0 | 43.7 | 49.4 | 80.2* | 70.5 | 79.7* | 82.7 | 75.3 | 74.3 | |
| Nervous and mental | 95.9 | 95.0 | 74.6 | ... | 80.2 | ... | ... | ... | 97.2 | |
| Tuberculosis | 69.6 | ... | ... | 64.5 | ... | ... | ... | ... | 69.8 | |
| Maternity | 44.8 | 50.2 | ... | ... | 15.1 | 35.6 | 65.8 | ... | ... | |
| Eye, ear, nose, throat | 55.7 | ... | 29.1 | ... | ... | 62.3 | ... | ... | ... | |
| Children's | 55.0 | ... | ... | 82.3 | ... | ... | 48.4 | ... | ... | |
| Contagious and venereal diseases | 33.7 | ... | ... | ... | ... | ... | 69.4 | 13.7 | ... | |
| Total | 77.9 | 48.7 | 60.1 | 78.1* | 53.7 | 78.1* | 78.3 | 65.5 | 82.0 | |
| Chicago | | | | | | | | | | |
| General | 73.8 | 56.2 | 47.4 | 80.9* | 70.5 | 78.6* | 82.8 | 73.8 | 67.2 | |
| Nervous and mental | 81.8 | 95.0 | 79.6 | ... | ... | ... | ... | ... | ... | |
| Tuberculosis | 69.6 | ... | ... | 64.5 | ... | ... | ... | ... | 69.8 | |
| Maternity | 44.6 | 46.2 | ... | ... | 15.1 | 35.6 | 65.8 | ... | ... | |
| Eye, ear, nose, throat | 55.7 | ... | 29.1 | ... | ... | 62.3 | ... | ... | ... | |
| Children's | 55.0 | ... | ... | 82.3 | ... | ... | 48.4 | ... | ... | |
| Contagious and venereal diseases | 33.7 | ... | ... | ... | ... | ... | 69.4 | 13.7 | ... | |
| Total | 70.4 | 63.6 | 58.6 | 78.7* | 48.9 | 76.8* | 77.7 | 61.0 | 67.8 | |
| Cook County (excluding Chicago) | | | | | | | | | | |
| General | 89.0 | 31.3 | 59.5 | 74.7 | ... | 85.9 | 82.3 | 78.9 | 99.0 | |
| Nervous and mental | 96.4 | ... | 66.4 | ... | 80.2 | ... | ... | ... | 97.2 | |
| Maternity | 66.2 | 66.2 | ... | ... | ... | ... | ... | ... | ... | |
| Total | 93.4 | 35.3 | 64.5 | 74.7 | 80.2 | 85.9 | 82.3 | 78.9 | 97.7 | |

^a Asterisks indicate the exclusion of a general hospital which failed to report patient days.

are usually lower than in the larger hospitals. Less than half the beds in the small general hospitals were occupied during 1945.

The individual hospitals show wide variations in the percentage of beds occupied. The lowest occupancy rate was in a special hospital in Chicago for the care of maternity patients, with less than 10 percent of its beds occupied, and the highest in a general hospital in the county outside Chicago. Hospitals with many long-stay cases—such as the chronically ill, the mentally ill, and tuberculous patients—usually have a relatively high percentage of their beds occupied, in some institutions approaching full capacity. Inspection of Table 148 shows that with the exception of these special hospitals the group of general hospitals had the smallest proportion of idle beds. General hospitals in Chicago had 74 percent of their beds occupied during the year and those in the county outside Chicago had 89 percent occupied.

There is apparently no relation between the type of control under which the hospitals in this area are administered and the utilization of their beds. Hospitals in each control classification have both high and low percentages of occupancy. The average occupancy rate of the government hospitals differs little from that of those under the auspices of nonprofit associations and those operated by private corporations. Occupancy rates during 1945 in the hospitals under the various types of control were as follows:

| | <i>Average Occupancy Rate</i> | <i>Range of Occupancy Rates</i> |
|-----------------------|-----------------------------------|-------------------------------------|
| Government | | |
| State | 93.8 | 62.3– 97.2 |
| County | 71.0 | 57.5– 99.0 |
| City | 58.6 | 13.7– 69.8 |
| Nonprofit | | |
| Church | 76.7 | 9.5–125.6 |
| Nonprofit association | 77.8 | 18.6– 93.7 |
| Proprietary | | |
| Individual | 61.7 | 23.4– 95.0 |
| Corporation | 77.2 | 29.1– 92.7 |
| All hospitals | 77.9 | 9.5–125.6 |

The margin of bed idleness which a hospital should permit in order to maintain efficient general care will depend upon the specific conditions under which it operates. Some hospitals should be able to operate with fewer vacant beds than others. It has been found that

satisfactory limits to occupancy can be established statistically for each hospital in terms of its average daily census. To determine the number of beds required, allowing for crowding for a few days during the year, the following formula can be applied: average daily census plus three or four times the square root of the average daily census ($\text{census} + 3 \text{ or } 4 \sqrt{\text{census}}$). For example, a hospital with a daily census of 100 patients should have 130 to 140 beds as a normal capacity to operate efficiently and without overcrowding. Although it was not possible from the information available for this survey to calculate satisfactory limits to bed occupancy in each individual hospital, it is evident from the various analyses related to utilization of facilities that some of the hospitals are not used as extensively as they should be and that others are seriously overcrowded.

In general, the largest proportion of idle beds is in the small hospitals, which must keep a greater reserve of vacant beds than the larger institutions. This requirement naturally increases the daily operating costs, and consequently many small hospitals find it difficult to operate at a profit without either overcrowding or curtailing service to patients. This fact is possibly the most valid contra-indication to small hospitals, particularly to those with a capacity of less than twenty-five beds.

WAITING LISTS The high percentages of bed occupancy in the general and in certain of the special hospitals corroborate the information obtained relative to overcrowding of hospitals and waiting lists. At the time of this survey only twenty-six of the 89 hospitals reporting were able to meet all the demands upon them for admission. Six failed to report on this question but sixty-three hospitals stated that they were unable to take care of the requests for admission and had found it necessary to establish waiting lists for patients. As of July 1, 1946, there were 3,069 names on these waiting lists, an average of over 50 cases per hospital. In one instance, a large general hospital had more than four hundred names on its waiting list. Most of the cases were for elective surgery but many were for diagnostic procedures and a few were emergency cases. Analyses of these records revealed that on the average for each patient on the waiting list there was a delay of eighteen days before admission to the hospital.

GENERAL BEDS USED FOR CHRONICALLY ILL PATIENTS In many hospitals, beds which could be used more advantageously for acute cases are occupied by chronically ill patients. These patients were re-

ported as suitable for nursing homes and similar institutions, but lack of available beds in such homes prevents their transfer. More than four hundred patients in this category were reported by nineteen hospitals, an average of more than twenty-one patients per hospital. These same nineteen hospitals had more than 800 cases with acute conditions on their waiting lists for needed inpatient services.

When a chronically ill patient no longer needs the therapeutic and diagnostic services of a general hospital, it is to the mutual advantage of both patient and hospital that he be transferred to a nursing home or other institution equipped to provide the type of care his condition requires.

CLOSURE OF SECTION OF HOSPITAL Of the 95 hospitals in the Chicago-Cook County area, 21 reported that for various reasons a section of the hospital had been closed. The number of beds involved amounted to around six hundred—one hospital failed to specify the exact number of beds in the closed section. The most frequent cause mentioned was the lack of professional personnel, particularly of nurses—15 hospitals gave this reason as the main cause for closing approximately four hundred beds. Three of these hospitals stressed the shortage of nonprofessional as well as of professional personnel and one hospital gave this as the only reason for closure. Four institutions indicated as contributing causes the inability to obtain housing facilities for their workers and, in consequence, the need for using patient occupancy to house nurses and other personnel. Sections of 2 hospitals were said to be closed for necessary repairs. In only 2 instances was the closure due to insufficient demand; 35 beds were involved. One of these was a highly specialized government institution, and the other a special proprietary hospital.

COST OF INPATIENT SERVICES PER DAY OF CARE

The accounting systems of the hospitals in the Chicago-Cook County area are, in general, individualistic, and consequently it was not possible from the statistical data available for this survey to make a detailed study of the cost of hospital services. Comparable information regarding total expenditures and the days of care rendered was obtained, however, from a sufficiently large number of institutions to provide a valid basis for a general estimation of the operating costs of inpatient services in the area. Financial data for 1945 were submitted by 45 nongovernment hospitals and 5 government institutions. From analyses of the information reported by the nongovernment hospitals

estimates were calculated for the remaining nongovernment hospitals. No estimates were made for the three state-controlled institutions.

The 45 nongovernment hospitals reported a total expenditure of \$18,581,295 during 1945, for which they provided 2,021,644 days of care. The average cost per patient day in this group of institutions was \$9.19. Among the individual hospitals, average daily cost of the inpatient services ranged from a low of \$4.24 to a high of \$13.30.

Bed occupancy rates in these nongovernment hospitals indicated that they were used to 78 percent of their capacity in 1945. Calculated on a per-bed basis, the average operating cost was \$7.18 per day.

From these figures on the average daily cost of inpatient services in 45 hospitals, it is estimated that the annual cost of operating the 87 nongovernment hospitals in the area is approximately \$35,000,000.

Government hospitals under the control of Cook County and of the city of Chicago reported a total expenditure of \$10,270,181 during 1945 for inpatient services. The yearly operating cost of the Cook County Hospital system was in round figures \$6,500,000. Average costs per patient day were \$7.30 in the Cook County Hospital and \$1.60 in the Cook County Infirmary.

There are three government hospitals under the control of the city of Chicago—the Municipal Tuberculosis Sanitarium, the Chicago Intensive Treatment Center, and the Contagious Disease Hospital. Costs of operation in these institutions amounted to \$3,770,181.26 in 1945. Average cost per day in the Chicago Intensive Treatment Center was \$7.75, and in the Municipal Contagious Disease Unit, \$16.45. In the Isolation Unit of the Contagious Disease Hospital the cost per patient day amounted to more than \$1,750. This high cost alone is sufficient justification for recommending the closing of the Isolation Unit.

It is estimated that excluding expenditures in the state-controlled institutions in the area approximately \$45,270,180 is spent annually by the hospitals in Chicago and Cook County for inpatient services.

QUALITY OF FACILITIES AND SERVICES

The hospital is the workshop for the physical repair of sick and injured human beings. Its equipment provides the tools used in that workshop for this repair. It is proper for the public to demand that the physical construction of the hospital plant, the equipment, and the personnel all be adequate to render good service to the sick. The status of the existing institutions in the Chicago-Cook County area

as to the general quality of the buildings and of the professional hospital care provided is described in this section.

HOSPITAL PLANTS *Age of hospitals and type of construction.*—Data gathered from fifty of the ninety-five hospitals in the area with a bed capacity of approximately ten thousand beds indicate that extensive physical rehabilitation and replacement of hospital plants are needed immediately. The average age of the most recent buildings of the group surveyed is 25.4 years. Some buildings are still being utilized for housing patients after more than fifty years of continuous service.

Buildings forty years old are considered obsolete from the standpoint of offering satisfactory accommodations for patients. At present there are nine hospital buildings with a capacity of five hundred beds which are at least as old as this. Much of the plumbing in these buildings is inadequate, steam, water, and electrical lines have deteriorated, and the buildings are difficult to maintain in a sanitary and hygienic condition. Early replacement or rehabilitation of these buildings is imperative. Other hospital buildings, involving a bed capacity of approximately five thousand beds, will become obsolete by 1950. In the interest of efficient and economical operation obsolete buildings should be replaced; if this is not possible, at least they should be rehabilitated.

It is expected that within the next fifteen years about seven thousand of the present 25,802 beds must be replaced or rehabilitated. Based upon 1946 costs of construction and expressed in terms of beds, it is estimated that this replacement of buildings would cost \$12,000 per bed, a total expenditure of \$84,000,000, and that rehabilitation would cost \$6,000 per bed, a total expenditure of \$42,000,000.

Of the fifty hospitals for which descriptive information was obtained seven were not of fire-resistant construction. These institutions had a total bed capacity of 2,755 beds. On the average, the buildings were more than three stories high—the tallest had six floors. All these buildings should be replaced by fire resistant structures at once. The cost of replacements would probably amount to approximately \$33,000,000. In addition to the inadequacy of the physical construction of these hospitals, at the time of this survey serious fire hazards which jeopardize the safety and lives of patients were observed in some. Immediate steps should be taken to remove all fire hazards from these buildings and to make them as safe as possible until replacements can be provided.

Boards of directors of hospitals are not inclined to discard an old building as long as it can be adapted to patient care or accommodation. There is a natural reluctance to replace anything as long as repairs will keep it in operation, but it is unsound to temporize by investing funds in buildings which are already poor investments and which will become progressively poorer. Adherence to this policy has long been a handicap to progress in many hospitals.

Future building programs.—Hospital boards of directors and hospital administrators in this area are well aware of the need for replacement and rehabilitation of aging buildings and for expansion of bed facilities, but the diversion of man power and materials to the war effort prevented them from entering upon any building programs during the war period. The constant overcrowding and the necessity of maintaining waiting lists have given impetus to programs for future construction as soon as the easement of the labor situation and the availability of material permits.

At the time of this survey 50 of the 95 hospitals had made plans for hospital construction which within the next five days would amount to \$35,883,500. These plans call for the addition of 3,799 beds, the larger portion of which will be in general hospitals. Approximately two thousand of these beds are to be added before the end of 1947, and the remainder by 1950. No definite information is available as to what proportion of this expected construction will be for replacement of obsolete and over-aged buildings, but it is estimated that at least 50 percent will be for that purpose.

In addition to bed facilities, 10 hospitals expect building service facilities such as laboratories, operating rooms, and associated service departments; 4 others plan additions to their administration and housing facilities.

Fire inspection of hospitals.—Fire protection of hospitals is a serious and important matter, calling for an efficient system of inspections, notices to offenders, and prompt attention to any failure to comply with regulations. The welfare of hospital patients and personnel demands continual vigilance by the hospital authorities and frequent and efficient inspection by the fire department, with prompt and forceful follow-up to ensure compliance.

A study of the fire inspection records on file in the office of the Chicago fire marshall revealed a serious situation with regard to the hospitals in Chicago. Reports were available for only 27 of the 76 hospitals, although the reference cards indicated that files should have

been on hand for 69 hospitals. Explanations for absence of the 42 missing report files were that they were lost, mislaid somewhere in the office, or possibly in the desks of some of the personnel. No reason was offered to account for the complete omission of 7 hospitals from the reference card listings.

Fire inspection reports were obtained on less than one third of the hospitals in Chicago, and in some of the available records the key reports outlining the inspector's findings were missing, and no official explanation was offered for their absence. A review of the available reports, together with observations and information from field representatives who visited various hospitals, is here used to indicate the general situation in Chicago. The records show that conditions in only 6 of the 27 hospitals were reported as satisfactory; in 3, complaints were indicated but the "complaint sheets" were missing; in the remaining 18 hospitals a total of 188 items of complaint were charged against them, an average of 10 complaints per hospital.

Many of the items of complaint were serious, such as insufficient egress, noncharged fire extinguishers, accumulated rubbish in the basement, obstructed fire-escape doors and corridors, and an inadequate fire alarm system. Observations of field representatives during visits to the institutions verified many of these conditions and uncovered numerous other items for which complaints should have been charged.

Examination of the available records points clearly to the lack of systematic and persistent follow-up regarding compliance with fire protection requirements. In some instances many months elapsed after complaints were reported before any attempt was made to remedy even the dangerous conditions. In other instances the absence of vital records made it impossible to determine whether or not the institution had corrected conditions. Some of these inspection reports were more than two years old, but no record as to compliance was on file.

The small proportion of files available for the survey is suggestive of an appalling laxity on the part of the Chicago Fire Department authorities in regard to fire inspection of hospitals, demand for unobstructed corridors, and a follow-up to ensure compliance with fire prevention requirements and regulations.

Conditions in the institutions in Cook County outside Chicago are much better than those within the city. Fire inspection reports in the office of the state fire marshall show regular and frequent inspec-

tions, good follow-up, and compliance by the institutions. Of the nineteen institutions, only four had been the subjects of any complaint, and these reports were of recent date—May and June, 1946.

HOSPITAL SERVICES AND PERSONNEL *Hospital personnel.*—The quality of hospital service is in large measure determined by the adequacy of the staff personnel—their number and training. In the present survey, detailed information was collected with respect to the nursing service and medical social service in the hospitals in the area. Although facts regarding other personnel were obtained incidentally during visits to the institutions by field representatives of the survey and in conferences with hospital administrators, no attempt was made to determine the total personnel of the hospital or the capacity in which they were employed. Hospital nursing service is discussed in Chapter 49, and medical social service in Chapter 50.

Analyses of the informal reports from the administrators are substantiated by the findings from the special service studies in revealing inability on the part of hospitals to obtain the necessary personnel to staff the institutions adequately. The large number of vacancies on the general duty nursing staffs and the heavy patient loads carried by student nurses emphasize the general complaint that there is a shortage of both technical and nontechnical personnel.

The nursing service survey showed that because of the lack of enough graduate nurses, student nurses mainly carried the patient care load. The nursing staffs of the fifty-one hospitals included in the study consisted of 1,160 full-time general-duty nurses and 239 part-time nurses. These same hospitals reported 392 vacancies on the general-duty staff for full-time nurses, or a vacancy percentage of 25. Although there was a wide variation among the various institutions with regard to the amount of nursing care given to patients and in the size of the patient load of the student nurses, the general averages are considerably below the standards for good professional care. The range in hours of nursing care rendered a patient is from .8 hour to 4.2 hours per day.

Laboratory.—A well-staffed and efficiently operated hospital laboratory contributes greatly to the quality of patient care. Information regarding the laboratory staff was obtained from 52 of the 95 hospitals. Forty-six of these institutions reported a pathologist with a medical degree on the regular hospital staff, employed full time in 31 cases and part time in 11. Four institutions did not report the employment status. Thirty-three of the pathologists are said to be cer-

tified by the National Board of Pathology; 7 are not certified; no report was given on 6.

Hospital laboratories are approved by the Illinois Department of Public Health for certain test procedures. The laboratories of 74 hospitals in the Chicago-Cook County area are registered with the department for approval of one or more types of tests. Many of the remaining 21 hospitals do not maintain laboratory facilities. This nonregistered group of institutions are mainly proprietary hospitals and small mental sanitariums. The tests for which the hospitals are registered include the Kahn test, dark-field test, gonococcus smears, smears for tubercle bacilli, pneumococcus typing. Only 14 of the hospital laboratories are approved for all 5 tests. As of January 1, 1946, frequencies of approval of the different laboratories for these tests were as follows:

| <i>Type of Test</i> | <i>Number Hospital Laboratories</i> |
|---------------------|---|
| Kahn test | 71 |
| Gonococcus smears | 71 |
| T. B. smears | 54 |
| Pneumococcus typing | 42 |
| Dark-field test | 37 |

Food handling and food service.—On the premise that an inspection of food handling facilities would provide a general indication of the quality of the nonprofessional services to patients, a representative sample of the Chicago hospitals was included in the special sanitation study of eating and drinking establishments conducted by the United States Public Health Service. A detailed discussion of this section of the survey is given in Chapter 14. Each of the hospitals included in the selected sample was given a sanitation rating. This rating expresses in percentage terms the degree of compliance by the institution with the Grade A requirements of the *United States Public Health Service Ordinance and Code Regulating Eating and Drinking Establishments*. The computed average rating of the hospitals was 25.9 as contrasted with 90 percent for a reasonably satisfactory compliance with the ordinance. The sanitation rating of 25.9 for this group of Chicago hospitals is lower than the average rating for restaurants and cafes in the Chicago-Cook County area established by the same investigators. Although the findings from this small sample may not be representative of the conditions in all the

hospitals in the area, they serve to indicate the urgent need for improvement in some of the hospitals.

Certain major violations which were of frequent occurrence among these hospitals deserve special mention. Every one of the inspected hospital kitchens violated the code pertaining to the construction and the cleaning of utensils and equipment. Regulations relative to bactericidal treatment also were generally violated. Other important items of violation included improper storage of food in ice boxes, lack of protection against rodents, vermin, and flies, and the use of bulk milk for patients.

At the time of this survey it was not the policy of the Chicago food inspectors to make routine inspections of hospital food services. Inspections were made only in response to complaints. Much of the negligence on the part of the institutions can be attributed to the lack of proper inspection with adequate follow-up by the health authorities.

According to the reports of the American Dietetic Association, 85 percent of the hospitals in the Chicago-Cook County area employ trained dietitians. From the results of this survey it is evident that some hospital dietitians, as well as others who are responsible for food service, need to be taught the fundamental principles of good sanitation and hygienic practices. Schools for training employees engaged in food handling have been conducted by the United States Public Health Service elsewhere with remarkable success. No such training courses had been offered in this area at the time of this investigation.

PROFESSIONAL SERVICES Organization and control of hospitals.—Organization of the administrative control of the hospital is an intangible factor in judging the quality of service to patients. As the governing body is the supreme authority, it is of paramount importance that it be selected with the utmost care. Its members should be representative citizens interested in hospital services and with sufficient leisure to devote the necessary time to fulfill their obligations to the patients, the staff, and the community.

Of the 95 hospitals in the area, 73 have boards of directors. There is wide variation among these institutions as to the number of members serving on the board, but in the majority of instances the number is less than 10—40 hospitals have less than 10 members, 20 have between 10 and 19, 12 have 20 or more, and 1 institution failed to specify the number of board members.

Physicians or their wives serve on thirty-five of these boards. This policy is not in accordance with the principles advocated by the American Medical Association, and generally hospital authorities advise against such appointments. When a physician serves as a member of a board of directors, he is placed in the position of being both master and servant. He is faced frequently with embarrassing situations in that fellow practitioners may look on him as a "snooper" or may accuse him of being unduly critical of other physicians and their practices. The medical viewpoint can be obtained by the directors through the selection from the staff of a representative group to serve in an advisory capacity.

The comments just made apply not only to the voluntary hospitals, but with even greater force to the governmental hospitals. Membership on the governing body of a tax-supported institution by a physician who practices therein is extremely undesirable and certainly exposes him to criticisms of using his appointment for his own personal, political, or professional gain. In some tax-supported hospitals the governing body is a part of or is controlled by the government, with the result that sometimes there may be considerable political influence detrimental to the administration and to the welfare of the patients. Tax-supported hospitals should be under the control of an independent, nonpolitical governing body appointed by persons or groups beyond political influence.

Accreditation by national professional associations.—For many years the American College of Surgeons has been interested in improving the quality of professional and hospital services and has devoted considerable effort toward the attainment of high standards of hospital care. The college published its first list of approved hospitals in 1918, and since that time has published one yearly. Approval is granted only after visitation and inspection by a representative of the college and assurance that the hospital meets the minimum standards established by the college. Many institutions on the approved list surpass these minimum standards. Hospitals have coveted the approval and have striven to meet the standards. Of the 95 hospitals in the Chicago-Cook County area, 67 have been approved unconditionally, and 7 have been provisionally approved. Among the unapproved hospitals, 14 are operated under proprietary auspices, 2 under governmental, and 5 under non-profit organizations. The last group are usually small institutions.

The American Medical Association through its Council on Medical

Education and Hospitals registers hospitals meeting certain minimum requirements and in connection with approval for internship, residency, and fellowship training has established a special set of standards. Approval by the American Medical Association emphasizes the quality of the medical and professional staff and their teaching abilities. Since many state boards of medical examiners require an approved internship before licensure of physicians and since the examining boards for certification in the specialties also require approved internships and residencies, the approval by the American Medical Association has become keenly desired and has given great impetus to improvements in standards of hospital and professional care. Of the 95 hospitals in the area, 88 are registered by the American Medical Association, of which 50 have been approved for internship training and 40 for residency or fellowship training.

Only 2 of the 16 proprietary hospitals in the Chicago-Cook County area have been approved by both the American College of Surgeons and the American Medical Association. In general, the quality of service provided by this group of institutions is inferior. Although their existence is of value to a small group of physicians (estimated to be 10 percent of the practitioners) who do not have other hospital affiliations, in the interest and welfare of patients every effort should be made to improve the services of these institutions so that they meet at last the minimum standards.

The American Dental Association, the American Psychiatric Association, and other professional groups have established minimum standards for recognition of training in their specialties. No attempt has been made in this survey to ascertain a complete listing of approvals, as it is believed that registration by the American College of Surgeons and the American Medical Association is sufficient to determine the standing of the hospital in the community.

Records.—Responses from the ninety-five hospitals in the area were not in all cases sufficiently clear or complete for an evaluative study of their records and record departments. Reports from sixty-six institutions provide enough information, however, for a reasonably accurate assessment of the quality of their present records.

Relatively few of the hospitals are in a position to provide a scientific and statistical appraisal of the work of a given physician, based on a carefully kept system of records. The only institutions reporting that accurate medical audits can be made were teaching hospitals

and other large institutions, where the most noted physicians are located. Medical audits are most needed in the smaller hospitals, where frequently the best trained physicians are not available.

An insufficient number of personnel, particularly those with adequate training in record keeping, is evident from the facts submitted by the hospitals. Only eighteen of the sixty-six hospitals from which comparable information was obtained have sufficient personnel for satisfactory record keeping, according to the established ratio of one record librarian per two thousand discharged patients.

In general, the unit system of filing is not in use in the Chicago-Cook County hospitals. Only 24 reported even a modified form of this system—18 were using the real unit system and 6 other hospitals a modified unit system.

The *Standard Nomenclature of Disease and Standard Nomenclature of Operations*² is used by only 29 of the hospitals. Records are kept of diagnoses by a cross index system in 47 of the hospitals and of symptoms and manifestations in 42 hospitals.

A continuous, scientific appraisal of their medical records is reported by forty-seven hospitals in the area. A medical record committee from the hospital staff assumes this responsibility. At the other extreme are many sanitariums and mental hospitals in which no attention is given to the medical record libraries by the hospital staff.

With the exception of a uniform statistical report for hospital care of maternity patients, there is no centralization of hospital statistics in the area and no standardization of the forms used by the individual institutions. Few of the hospitals even make an effort to correlate the services or records of their own inpatient and outpatient departments. Under these conditions it is evident that the health departments of Chicago and Cook County are handicapped in any attempt to obtain complete and comparable information from the hospitals for essential community health surveys.

Teaching in hospitals.—There are 23 hospitals in Chicago-Cook County which are affiliated with medical colleges. Of these, 20 hospitals are affiliated with schools that have been approved for clinical instruction to medical students, and 3 with a nonapproved school. The bed capacities of these hospitals (11,136 beds) represent more

² *Standard Nomenclature of Disease and Standard Nomenclature of Operations*, 3d ed., ed. by Edwin P. Jordan, Chicago, American Medical Association, 1942.

than 40 percent of the total beds in the area. The great majority of these teaching beds are used by the group of approved medical schools—10,817 beds.

Most of the teaching beds are in ward services—approximately seven out of every ten beds available for clinical instruction are in wards. The proportion of ward beds is greater among the institutions affiliated with the approved schools than in the nonapproved group—70 percent of the former and 42 percent of the latter. Of the total teaching beds, 14 percent are in private service, and 16 percent in semiprivate service (2 beds per room).

In addition to the medical colleges, the hospitals in this area are associated with other professional training schools. These include 43 accredited training schools for nurses, 10 approved schools for clinical laboratory technicians, and 1 for physical therapists. Schools for X-ray technicians are associated with 15 hospitals.

With the exception of the schools for nursing, the training courses offered in hospitals usually vary in length from a year to 2 years. The course for laboratory technicians covers 12 to 15 months, and approximately 86 students can be accommodated; that for X-ray technicians varies from 12 to 24 months, with a maximum enrollment of 78 students.

The 1 school for physical therapists offers a 1-year course and can accept 16 students for the period. A university in the area with teaching hospital facilities provides a regular 4-year training course for occupational therapists.

Three hospitals conduct schools for medical record librarians. A 1-year training course is offered, and 24 students can be accommodated. At the time of the survey only 8 students were enrolled for this work.

Internships and residencies.—The American Medical Association reports a total of 8,584 internships available in 798 approved hospitals. Chicago-Cook County offers 7 percent of these internships and has 6 percent of the approved hospitals—627 internships available in 50 hospitals.

The situation is similar with respect to residencies and fellowships. Of the 8,930 residencies and fellowships reported by the American Medical Association, 608, or approximately 7 percent of the total, are offered by approved hospitals in this area. There are 887 hospitals approved for residency training, and 40 of these are located in Chicago-Cook County. Residencies offered are well diversified and cover

most of the fields of medicine. The distribution of residencies in relation to the various specialties is shown in Table 149. It will be observed from the table that no residencies are available in this area in the specialties of geriatrics, cardiology, or plastic surgery per se.

TABLE 149. APPROVED RESIDENCIES AND FELLOWSHIPS, CLASSIFIED BY SPECIALTIES, CHICAGO-COOK COUNTY AREA

| <i>Specialties</i> | <i>Hospitals Approved</i> | <i>Number Residencies</i> |
|----------------------------------|-------------------------------|-------------------------------|
| Allergy | 1 | 2 |
| Anaesthesiology | 8 | 23 |
| Communicable diseases | 2 | 14 |
| Dermatology and syphilis | 5 | 9 |
| Malignant diseases | 1 | 2 |
| Medicine | 18 | 79 |
| Mixed | 1 | 3 |
| Neurology | 3 | 10 |
| Neurology surgery | 7 | 12 |
| Obstetrics and gynecology | 29 | 81 |
| Orthopedic surgery | 10 | 31 |
| Ophthalmology and otolaryngology | 11 | 71 |
| Pathology | 14 | 53 |
| Pediatrics | 12 | 51 |
| Physical medicine | 2 | 2 |
| Psychiatry | 8 | 25 |
| Radiology | 18 | 38 |
| Surgery | 27 | 85 |
| Thoracic surgery | 1 | 2 |
| Tuberculosis | 1 | 1 |
| Urology | 7 | 14 |
| Total | 40 | 608 |

Autopsies.—The autopsy rates of the different hospitals provide still another significant index to the quality of the service rendered in Chicago-Cook County. This rate is usually expressed in percentage terms and represents the proportion of all deaths in hospitals which come to autopsy. From the extensive experience of hospitals throughout the country, it is a reasonable assumption that a high autopsy percentage indicates keen interest on the part of the medical staff in research and in clinical instruction and that it reflects a correspondingly high degree of efficiency. Autopsies are considered to be the best indicators of the accuracy and honesty of diagnoses.

The American College of Surgeons specifies a 20 percent autopsy rate as necessary for approval of the hospital; the American Medical Association a 15 percent rate. An over-all autopsy rate of 35 percent is reported by the American Medical Association for hospitals approved by them. In Chicago-Cook County hospitals the over-all au-

topsy rate is 32 percent, with approximately 2 out of every 3 institutions achieving the 20 percent standard.

From analyses of the records it is evident that causes of death were investigated by post-mortem examination more frequently in hospitals approved by the American Medical Association for internship and residency training than in the other institutions in the area, and that autopsy percentages in the hospitals affiliated with medical schools were generally among the highest. Autopsy rates in relatively few of the hospitals approved for training were below the 20 percent standard of the American College of Surgeons. The proportionate distribution of the 1945 autopsy percentages in the fifty hospitals approved for internships and residencies was as follows:

| <i>Autopsy Percentages</i> | <i>Percentage of Hospitals</i> |
|----------------------------|--------------------------------|
| 70 and over | 8.0 |
| 50-69 | 18.0 |
| 30-49 | 27.5 |
| 20-29 | 33.5 |
| Under 20 | 13.0 |

The majority of the hospitals under governmental control and of those operated by nonprofit associations have autopsy rates at or above the 20 percent standard, but in only a small number of the proprietary hospitals are the rates as high. In general, the group of hospitals under the auspices of nonprofit associations have the highest autopsy percentages. Table 150 shows the number of hospitals in the various control groups with specified autopsy percentages and the average rate for each group. It is apparent from the table that, although some hospitals in each control classification have low rates, most of those under proprietary auspices have very low rates—eight of the eleven in the proprietary group have rates below the 10 percent level.

When the institutions are considered with respect to the type of medical service they provide, a general hospital under state control has the highest autopsy rate of any of the Chicago-Cook County hospitals. The average autopsy percentages according to service and the controlling auspices are summarized in Table 151. As a group, the general hospitals have a lower autopsy rate than the special hospitals, with the exception of the special institutions for mentally ill and tuberculous patients. The over-all rate in the general hospitals in 1945 was 33 percent. General hospitals operated by the state and by

TABLE 150. NUMBER OF HOSPITALS WITH SPECIFIED AUTOPSY PERCENTAGE CLASSIFIED BY TYPE OF CONTROL,
CHICAGO-COOK COUNTY AREA, 1945

| AUTOPSY PERCENTAGES | TOTAL | HOSPITALS BY SPECIFIED CONTROL | | | | | PROPRIETARY | |
|------------------------|-----------------|--------------------------------|--------|-----------|--------|---------------------------|-------------|-------------|
| | | GOVERNMENT | | NONPROFIT | | | Individual | Corporation |
| | | State | County | City | Church | Nonprofit Associations | | |
| 90-100 | 1 | .. | .. | .. | 1 | .. | .. | .. |
| 80-89.9 | 3 | .. | .. | .. | .. | 3 | .. | .. |
| 70-79.9 | 3 | 1 | .. | .. | 1 | 1 | .. | .. |
| 60-69.9 | 5 | 1 | .. | 1 | 1 | 2 | .. | .. |
| 50-59.9 | 6 | .. | .. | .. | 1 | 5 | .. | .. |
| 40-49.9 | 7 | .. | .. | .. | 1 | 6 | .. | .. |
| 30-39.9 | 12 | .. | .. | .. | 7 | 4 | .. | 1 |
| 20-29.9 | 24 | .. | 1 | 1 | 11 | 10 | 1 | .. |
| 10-19.9 | 8 | .. | .. | .. | 3 | 4 | .. | 1 |
| 0-9.9 | 18 | 1 | 1 | .. | 5 | 3 | 3 | 5 |
| Total records | 87 ^a | 3 | 2 | 2 | 31 | 38 | 4 | 7 |
| Average rate | 32.14 | 29.69 | 26.56 | 31.58 | 30.05 | 41.31 | 12.00 | 16.74 |

^a No autopsy records were available from seven hospitals—two under the control of nonprofit associations, three under individuals and two under corporations. No deaths occurred in a municipal venereal disease hospital.

TABLE 151. AVERAGE AUTOPSY RATES IN HOSPITALS CLASSIFIED BY TYPE OF SERVICE AND CONTROL,
CHICAGO AND COOK COUNTY, 1945

| LOCATION AND TYPE OF SERVICE | TOTAL | GOVERNMENT | | | TYPE OF HOSPITAL CONTROL NONPROFIT | | | PROPRIETARY | |
|------------------------------------|-------|------------|--------|-------|---------------------------------------|---------------------------|------------|-------------|--|
| | | State | County | City | Church | Nonprofit Associations | Individual | Corporation | |
| Chicago and Cook County | | | | | | | | | |
| General | 32.50 | 77.46 | 26.56 | ... | 29.85 | 40.80 | 12.50 | 17.11 | |
| Nervous and mental | 8.44 | 8.60 | ... | ... | ... | ... | ... | ... | |
| Tuberculosis | 21.73 | ... | ... | 22.84 | ... | ... | ... | ... | |
| Maternity | 55.81 | ... | ... | ... | 57.14 | ... | ... | ... | |
| Eye, ear, nose, throat | 66.66 | 66.66 | ... | ... | ... | ... | ... | ... | |
| Children's | 77.12 | ... | ... | ... | ... | 77.12 | ... | ... | |
| Contagious | 67.96 | ... | ... | 67.96 | ... | ... | ... | ... | |
| Total | 32.14 | 29.69 | 26.56 | 31.58 | 30.05 | 41.31 | 12.00 | 16.74 | |
| Chicago | | | | | | | | | |
| General | 33.36 | 77.46 | 28.36 | ... | 31.46 | 40.53 | ... | 17.53 | |
| Nervous and mental | ... | ... | ... | ... | ... | ... | ... | ... | |
| Tuberculosis | 21.73 | ... | ... | 22.84 | ... | ... | ... | ... | |
| Maternity | 57.14 | ... | ... | ... | 57.14 | ... | ... | ... | |
| Eye, ear, nose, throat | 66.67 | 66.67 | ... | ... | ... | ... | ... | ... | |
| Children's | 77.12 | ... | ... | ... | ... | 77.12 | ... | ... | |
| Contagious | 67.96 | ... | ... | 67.96 | ... | ... | ... | ... | |
| Total | 33.59 | 77.31 | 28.36 | 31.58 | 31.69 | 41.13 | ... | 17.14 | |
| Cook County (excluding Chicago) | | | | | | | | | |
| General | 27.27 | ... | 7.04 | ... | 22.91 | 42.17 | 25.00 | ... | |
| Nervous and mental | 8.60 | 8.60 | ... | ... | ... | ... | ... | ... | |
| Maternity | ... | ... | ... | ... | ... | ... | ... | ... | |
| Total | 24.40 | 8.60 | 7.04 | ... | 22.91 | 42.17 | 23.08 | ... | |

nonprofit associations account for this high average. The table shows that in the maternity, children's, and contagious disease hospitals the causes of more than half of all deaths occurring in the institutions were investigated by post-mortem examinations. Average autopsy rates in these special hospitals ranged from 56 percent in the maternity group to 77 percent in the children's hospitals.

With respect to size, the over-all autopsy rates in the small hospitals are lower than in the large hospitals. This finding is particularly evident in the comparisons of general hospitals, which in this area vary widely in size. The average autopsy percentages in general hospitals with fewer than seventy-five beds are consistently below the 20 percent standard, while in the larger institutions they are considerably above this level. A summary is given in Table 152 of the autopsy percentages in hospitals classified according to the type of service they provide and their bed capacity. It is highly probable that the averages shown for the small general hospitals and the specialized institutions are higher than they would have been if the data had been complete, since very likely in the institutions which failed to report the number of autopsies performed post-mortem examinations were rarely made.

According to the information submitted by the hospitals, 8 of the hospitals reporting deaths performed no autopsies in 1945. All of these were in the small hospital category—less than 100 beds, most of them having less than 25 beds. From analyses of the records it is safe to conclude that in 1945 relatively few of the deaths occurring in the small institutions in the Chicago-Cook County area came to autopsy. Among the size group of 100 to 300 beds, which is the most frequent size classification of hospitals in this area, only 8 of the 46 hospitals had autopsy percentages below the 20 percent standard.

NEED FOR GENERAL HOSPITAL BEDS IN THE CHICAGO-COOK COUNTY AREA

This survey of the existing facilities in the Chicago-Cook County area has shown that there are 95 hospitals with a total bed capacity of 25,802, of which 16,023 are beds for general care, including 400 general hospital beds now used for chronically ill patients. Demand and need for hospital facilities are influenced by the local conditions in the community. Important are the age and density of the population, economic status, housing, and the relative size and character of racial minorities, as well as various factors directly related to the

TABLE 152. AVERAGE AUTOPSY RATES IN HOSPITALS CLASSIFIED BY TYPE OF SERVICE AND SIZE,
CHICAGO AND COOK COUNTY, 1945

| LOCATION AND TYPE OF SERVICE | AUTOPSY RATES BY BED CAPACITY OF HOSPITALS ^a | | | | | | | | |
|---------------------------------|---|----------|-------|-------|-------|---------|---------|---------|--------------|
| | TOTAL | Under 25 | 25-49 | 50-74 | 75-99 | 100-199 | 200-299 | 300-499 | 500 and Over |
| Chicago and Cook County | | | | | | | | | |
| General | 32.50 | 8.57 | 8.77 | 17.55 | 32.27 | 29.54 | 34.62 | 43.59 | 32.30 |
| Nervous and mental | 8.44 | ... | ... | ... | ... | ... | ... | ... | 8.60 |
| Tuberculosis | 21.73 | ... | ... | ... | ... | ... | ... | ... | 22.84 |
| Maternity | 55.81 | 83.33 | ... | ... | ... | 73.68 | 38.46 | ... | ... |
| Eye, ear, nose, throat | 66.67 | ... | ... | ... | ... | 66.67 | ... | ... | ... |
| Children's | 77.12 | ... | ... | 50.00 | ... | ... | 77.59 | ... | ... |
| Contagious | 67.96 | ... | ... | ... | ... | ... | ... | 67.96 | ... |
| Total | 32.14 | 19.51 | 8.06 | 16.88 | 31.71 | 29.71 | 36.12 | 44.82 | 30.68 |
| Chicago | | | | | | | | | |
| General | 33.36 | ... | 9.47 | 16.44 | 32.27 | 30.95 | 30.76 | 51.30 | 34.15 |
| Nervous and mental | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Tuberculosis | 21.73 | ... | ... | ... | ... | ... | ... | ... | 22.84 |
| Maternity | 57.14 | 100.00 | ... | ... | ... | 73.68 | 38.46 | ... | ... |
| Eye, ear, nose, throat | 66.67 | ... | ... | ... | ... | 66.67 | ... | ... | ... |
| Children's | 77.12 | ... | ... | 50.00 | ... | ... | 77.59 | ... | ... |
| Contagious | 67.96 | ... | ... | ... | ... | ... | ... | 67.96 | ... |
| Total | 33.59 | 29.41 | 8.57 | 15.68 | 31.71 | 31.15 | 32.72 | 52.66 | 33.59 |
| Cook County (excluding Chicago) | | | | | | | | | |
| General | 27.27 | 13.04 | 5.26 | 22.35 | ... | 21.87 | 54.37 | 32.18 | 7.04 |
| Nervous and mental | 8.60 | ... | ... | ... | ... | ... | ... | ... | 8.60 |
| Maternity | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Total | 24.40 | 12.50 | 5.26 | 22.35 | ... | 21.87 | 54.37 | 32.18 | 7.76 |

^a No autopsy records were available from 7 hospitals—1 with bed capacity under 25 beds, 4 with 25-49 beds, 1 with 50-74 beds, and 1 with 75-99 beds. No deaths occurred in the venereal disease hospital having a bed capacity of over two hundred beds.

general health of the residents. It would follow that the number of hospital beds required in one community may differ greatly from bed ratios which are accepted as satisfactory in other localities.

A reasonably accurate bed ratio can be established for an area by determining the amount of current and prospective sickness in the locality and the utilization of hospital facilities for the care of the sick. Statistics on the amount of sickness are, however, both difficult and expensive to obtain. Recent studies conducted by the Commission on Hospital Care have shown that the need for general hospital beds is closely related to the incidence of births and deaths.³ From the crude birth and death rates and the actual use of hospital care for births, deaths, and correlated sickness they have found that a bed ratio may be obtained for predicting the number of beds needed if additional sick persons were hospitalized. Birth and death rates are readily available, and statistics on the use of hospital care are not difficult to secure. From these accessible data it is thus possible to determine a realistic bed ratio for a community upon which its future bed requirements may be estimated.

Hospital statistics for the country as a whole show that the public uses about 250 days of hospital service for each death and correlated sickness in a general hospital. This relationship when expressed in terms of the average daily census for all types of illness in hospitals is called a bed-death ratio. The national bed-death ratio is obtained by dividing 250 (the average days of hospitalization per death) by 365, which is .7. It signifies that during a year .7 of a bed is used for each hospital death. The facts that it has been found to vary little from state to state and that the ratio of occupied beds to hospital deaths in most typical general hospitals is about the same as the state averages, justify the use of this national ratio in estimating the bed requirements of specific localities.

Births in a community are reflected in the total death rate, and in most states the newborn mortality rate is not very different from the adult hospital death rate. Although it would seem that an estimate of total bed need should be based on births, as well as deaths, when there is close agreement between mortality rates of newborn and adults the Commission on Hospital Care reports that it may not be necessary to include bed-births in the formula. Estimations of the number of general hospital beds needed in the Cook County area, have therefore been based entirely on the bed-death factor. For predic-

³ Commission on Hospital Care, *Hospital Survey News Letter*, Chicago, July, 1946.

tion purposes this ratio should be applied to the total number of deaths in the local area which are expected to occur in hospitals in the future. Present needs and the expected bed requirements for the next twenty years have been determined by this procedure for the city of Chicago and the area outside Chicago.

In Chicago approximately 50 percent of all deaths, exclusive of those from respiratory diseases, occur in hospitals (1944 record). The average death rate in the community during the ten-year period 1935-44 was 10.91 per 1,000 population. As 50 percent of the deaths are expected to occur in hospitals, the average death rate in hospitals, then, is 5.45 per 1,000 persons. The bed-death ratio assumes a 100 percent bed occupancy rate. It has been demonstrated, however, that effective hospital operation requires a margin of bed idleness. In Chicago a realistic occupancy rate in the general and allied special hospitals would be approximately 75 percent. Accordingly, Chicago would need 5.1 beds per 1,000 population ($.7 \times 5.45 \div 75$). When this ratio is converted into total number of beds in terms of the 1940 census (3,396,808), the need for hospital service is estimated to be 17,200 beds for general care. Requirements for the immediate future (1950), based on the population projections computed by the Chicago Plan Commission, are expected to be 18,400 beds.

At the time of this survey Chicago's population was probably much larger than that reported by the U. S. Bureau of the Census in 1940. Estimates by the Illinois Public Aid Commission indicate that in 1946 at least 3,600,000, perhaps 3,800,000, persons resided in Chicago. Also, it should be recognized that any prediction of hospital bed utilization based upon the bed-death ratio must take into account the increasing use of hospitals stimulated by the public's appreciation of good hospital care. It is probable that more than 50 percent of deaths, the present rate, will occur in hospitals in Chicago in the future. On the assumption that the percentage of all deaths and correlated sickness in hospitals will be raised 1 percent a year, the bed ratios and the approximate number of beds needed for the years 1950 through 1965 have been estimated. Bed requirements are given in Table 153 expressed in terms of the present 50 percent rate and at progressively increasing rates of 55 percent, 65 percent, and 70 percent for 1950, 1960, and 1965, respectively. At the hospitalization level expected for 1950, the bed need in Chicago in the immediate future is predicted to be 20,300 general hospital beds.

Reports from the Illinois Department of Public Health indicate that the percentage of deaths in hospitals among the residents of

Cook County outside Chicago is approximately the same as that in Chicago—about 50 percent, exclusive of deaths in state institutions for nervous and mental diseases. The average death rate in the area exclusive of Chicago during the past decade was 11.76, 50 percent of which is 5.88. The bed need, therefore, according to the national bed-death ratio and an occupancy rate of 75 percent is 5.49 beds per 1,000 ($.7 \times 5.88 \div 75$). Estimated in terms of the 1940 population (666,534) Cook County outside of Chicago requires at least 3,600 beds in general and allied special hospitals.

TABLE 153. ESTIMATED BED RATIOS AND NUMBER OF GENERAL HOSPITAL BEDS REQUIRED TO MEET HOSPITALIZATION NEEDS IN CHICAGO, 1950-65

| YEAR | POPULATION PROJECTIONS ^a | PRESENT LEVEL OF HOSPITALIZATION ^b | | HIGHER LEVEL OF HOSPITALIZATION ^c | |
|------|-------------------------------------|---|---------------------------|--|---------------------------|
| | | <i>Bed Ratio to Population</i> | <i>Number Beds Needed</i> | <i>Bed Ratio to Population</i> | <i>Number Beds Needed</i> |
| 1950 | 3,625,000 | 5.08 | 18,400 | 5.60 | 20,300 |
| 1960 | 3,750,000 | 5.08 | 19,000 | 6.62 | 24,800 |
| 1965 | 3,800,000 | 5.08 | 19,300 | 7.13 | 27,000 |

^a Estimates by the Chicago Plan Commission.

^b Present rate is 50 percent of all deaths that occur in hospitals.

^c Present level increased 1 percent each year: 55 percent, 60 percent, and 70 percent of deaths in hospitals.

It is predicted that in 1960 the population of the county exclusive of Chicago will be 960,000. On the assumption that the level of hospitalization in the area will increase 1 percent a year, the bed requirements in that year will be 7.13 beds per 1,000 residents (65 percent of the deaths occurring in hospitals), or a total of 6,800 beds.

A conservative estimate of the present need for general hospital beds in the Chicago-Cook County area is 20,800 beds. The crude death rate on which this need is based is not likely to change significantly, but the percentage of deaths in general and allied hospitals should become progressively higher in the future. Accordingly, the bed need for this area in 1960 is expected to be 31,600 beds.

The Chicago-Cook County area has a total of 15,623 beds for the care of acute conditions, excluding the general hospital beds now used for chronic diseases, and should have at least 20,800. It is thus evident that this area requires an additional 5,200 beds to meet its immediate needs for hospitalization.

HOSPITALIZATION FOR THE NEGRO

From the reactions of hospital authorities in the area to the efforts of the survey staff to obtain information regarding the type and ade-

quacy of hospital facilities for the Negro, it is evident that this problem has not been faced frankly in the Chicago-Cook County area. Generally, hospital authorities hesitated to discuss the situation with representatives of the survey, and the answers submitted on questionnaire schedules were ambiguous, unreliable, and frequently misleading. Some hospitals stated very definitely that Negroes were not admitted for care. Others reported that Negro patients able to pay for hospital service were admitted, but when asked for factual data covering 1945 they could produce no evidence of the admission of a single Negro patient during that year.

Hospital care for the Negro is a growing problem and one of paramount importance in the Chicago area, which in 1940 had a Negro population of 277,731 (in the Chicago-Cook County area, 294,157). During the war years the population was substantially increased, and at the time of this survey it was estimated by the Illinois Public Aid Commission and other interested agencies to be approximately 350,000—at least 10 percent of the total population of the city of Chicago.

It is a well-recognized fact that in many diseases the morbidity rates among Negroes are higher than among whites. This is particularly true of diseases affected or influenced by poor housing, overcrowding, filth, and a low level of incomes, since Negroes have to contend with these conditions more frequently. Statistics on morbidity were not available for study, but from comparative analyses of the death rates of the Negro and white populations in Chicago a higher illness rate among Negroes is indicated. Comparisons were made of the average death rates during 1940-44 in the three community areas in which at least 90 percent of the residents were Negro with the rate in the total Chicago area. The selected communities, designated for census and other statistical purposes as local areas 35, 38, and 40, are densely populated sections in which in 1940 a total of 209,116 persons were concentrated in an area of less than four square miles. The crude death rate for the five-year period in these communities was 15.4 per 1,000 population, in contrast to a death rate of 10.8 in the entire city of Chicago. Average death rates in the three selected areas were 20.1, 14.1, and 13.1, respectively. On the basis of these comparative differences alone, the greater need for hospital care among Negroes in this area is strikingly suggested.

Bed-death ratios calculated from death rates in the selected Negro communities indicate that 7.19 hospital beds per 1,000 Negroes are

needed in Chicago. On the assumption that the Negro should receive hospitalization on the same basis and will use it to the same extent as the white population, it is estimated that at least two thousand beds are required for the care of acute illnesses among Negroes in Chicago.

In addition to the beds for general care, it is predicted that 2,900 beds will be needed for tuberculosis and mental diseases—1,600 beds for tuberculous patients and 1,300 beds for the mentally ill. Estimations for tuberculous patients are based on the bed rate established by the National Tuberculosis Association of 2.5 beds per death from this disease. In 1945 Chicago had 659 nonwhite deaths from tuberculosis. Bed requirements for Negro patients with nervous and mental diseases have been predicted from the findings in this area that one patient day of care out of every four days of care rendered for all hospital services is for a mentally ill patient (see Table 146). To meet the immediate need for hospital care in general and special institutions, Chicago requires 4,900 beds for Negro patients.

Similarly, in the area exclusive of Chicago it is estimated that 120 general hospital beds should be available to Negroes. The total need for beds for acute illness among the Negro population in Chicago-Cook County is therefore 2,120 beds. These estimates are based on the 1940 census. If the 1946 Negro population in the area is as large as has been indicated by interested local agencies, these bed requirements should be increased to a total of 2,700.

As previously mentioned, the information obtained with respect to hospital facilities actually available to Negro patients was incomplete and inconclusive. For Negro patients who are financially able to pay for hospital services, it is unlikely that there are more than 315 beds for general care in the entire area. The majority of these are in two institutions operated by and for Negroes. Approximately 130 beds are available in several other nonprofit hospitals usually in private rooms or in a segregated section of the institution. In either case the beds are available only on a quota basis, and there is no opportunity for the Negro physician to continue to care for his patients.

A well-organized and smoothly functioning institution operated by and for Negroes is located in Chicago—Provident Hospital. It provides facilities for both those who can afford to pay for hospital service and those who cannot, and also offers opportunities for the Negro physician to practice and to further his professional education. Unfortunately, the capacity of this institution is very limited—a total of 155 beds. The other hospital for Negroes is located in the area out-

side Chicago—the Community Hospital of Evanston. It is a small institution, only 29 beds, with a mixed staff of white and Negro physicians, but is operated entirely for Negro patients.

No special investigations were conducted by the survey staff with respect to the Negro patient's ability to pay for hospital and medical care. As of July, 1946, according to reports from the public welfare agencies in the area, 13 percent of the Negro population were receiving some type of public assistance.⁴ Among the patients receiving care for acute conditions in the government hospitals, only one person in five was a recipient of public aid and assistance. It is thus evident that a large proportion of the patients who obtain free care in government institutions in the Chicago-Cook County area do not receive financial assistance from any public agency. Among these unquestionably are many Negroes. Although no specific information was available on the number of medically indigent among the Negroes, under conditions existing at the time of this survey, particularly with respect to the relatively higher living costs in the Negro neighborhoods as compared with the white, it is probable that at least half the Negro population in the area is unable to pay the full cost of hospitalization and medical care.

On the basis of this very broad generalization regarding the pay status of the Negro patient, together with the fact that an estimated fifty thousand Negroes carry prepaid hospitalization, the distribution of the 2,700 beds required to meet the demand for hospital care should be as follows: 900 beds for private and semi-private services in hospitals under the auspices of nonprofit organizations; the remaining 1,800 beds for ward service in hospitals under either government control or nonprofit auspices for Negro patients who are recipients of public assistance or are medically indigent.

COMMENTS

People take hospitals for granted. They accept as self-evident the vital role these institutions play in the welfare of the community and appear to assume that unlike other business organizations they are free from the effects of any adverse conditions which may prevail. The fact is that hospitals are confronted with the same economic and

⁴ The total number of Negroes who were receiving some type of public assistance at the time of the Chicago-Cook County Health Survey was 44,500, or 13 percent of the estimated Negro population in Chicago in 1946. There were about 9,000 recipients of Old Age Assistance, 25,000 of Aid to Dependent Children grants, 500 of Blind Assistance, and 10,000 recipients of general relief.

general problems that beset private business and large corporations and are even more seriously concerned by them, since they may jeopardize the well-being and at times the very lives of the persons they serve.

From the factual data presented in this chapter certain major problems emerge regarding the adequacy of hospital care in the Chicago-Cook County area and the extension and co-ordination of the facilities required to meet present and future demands. Important among them are: the immediate need for more hospital facilities, together with sufficient personnel to provide good service for the sick; recognition on the part of both hospitals and other community health agencies of their interrelation and interdependence; the necessity for central planning and active co-operation for the intelligent use of existing facilities and the development of additional or new types as the general welfare of the people in the area may require. In the discussion which follows, the situation as revealed by the survey findings is reviewed, and action to be taken is suggested.

CHIEF PROBLEMS Hospitals in this area are doing a tremendous job, and for the most part are doing it surprisingly well in view of the many difficulties with which at present they have to contend. Most of them appear to be maintained in excellent condition. The few institutions that are not kept in as good condition as they should be point to their shortages of help and the strenuous efforts they are making to carry on under very trying circumstances.

Personnel shortages.—The war made deep inroads into all branches of the hospitals' professional and administrative staffs. Physicians and surgeons, interns and nurses, responding to the call for service with the Armed Forces left big gaps, which were difficult if not impossible to fill. Those who remained, especially the nurses who had previously retired and then returned to their former positions to carry on during the emergency, did a magnificent job. When the fighting ended, many of these nurses again returned to their homes, with the result that hospitals at the present time are seriously handicapped by an acute shortage of available graduate nurses. Church hospitals have fared better than non-sectarian institutions, particularly with respect to the personnel in supervisory or administrative capacities, but they, too, have personnel shortages.

Before the war a full quota of student nurses served as a reservoir from which the normal demand for graduate nurses could be supplied, but the present ratio of student nurses has fallen far below

minimum requirements. At the time of the survey many of the schools of nursing did not have full enrollments. Volunteer nurses' aides are donating their time and efforts to help meet the shortage of nursing personnel. Although this is an unselfish gesture and a valuable contribution, it cannot, of course, replace the professional services of graduate nurses.

Schools for technical and professional workers also report that they are not being fully utilized. The majority of them have enrollments of less than capacity. In order to interest larger numbers of prospective candidates, every effort should be made to make these fields sufficiently attractive and remunerative to compete with other occupations.

Domestic help is an ever-present problem in hospitals. Personnel employed in the laundries and kitchens and as general help was reduced during the war years because of the higher wages offered by industry. Since the war such help has not returned to the institutions. The situation is similar with respect to the administrative and clerical staffs.

In general, the small hospitals have been hardest hit by all these shortages. Large institutions maintain highly organized departments, within which adjustments can be made so as to function during emergencies. In small hospitals, where the loss of one important employee may seriously interfere with the orderly conduct of business routine, adjustments usually are not possible.

Shortages of staff can be alleviated by concentration on better personnel practices, including salary scales and working conditions. There is sufficient evidence to warrant the assumption that personnel is available, particularly nursing personnel, but is being attracted into allied and divergent fields by shorter hours, higher wages, and more satisfactory working conditions (see Chapter 49).

Overcrowding in hospitals.—Added to the serious problem of staff shortages is that of the overcrowding of the hospital facilities. This combination severely taxes the ingenuity and resourcefulness of the hospital authorities. Nearly all the institutions in the area report waiting lists. At the time of the survey the number on the lists of the general hospitals ranged from 5 to 417 persons, and the waiting period, from a few days to many months. All but one hospital, however, contrive to care for emergency cases immediately. In this one institution emergency admissions have to be deferred twenty-four hours.

A factor contributing to the overcrowded condition is the rapid growth of prepaid hospital care plans in this area. In the Chicago-Cook County area such plans now carry more than one million persons as members entitled to prepaid hospitalization service in approved hospitals.

Indications are that the congestion due to overcrowding will increase. In normal times the remedy would be to build more hospitals and construct new additions to present plants, but under existing conditions there are serious obstacles to such expansion of facilities. A few hospitals having completed plans for entirely new buildings are going ahead with their construction programs. Others, whose contracts for all materials had not been completed earlier, are finding not only that prices of materials have increased but also that many of the essentials are not obtainable, and consequently they have been forced to delay construction pending improvement in conditions and more reasonable prices. The administrator of one relatively large hospital reported that plans had been practically completed for doubling the capacity of the institution, but in addition to the unpredictable cost of materials there is the big question of whether to go ahead with the new building program when the hospital cannot obtain sufficient personnel for its present plant.

Overcrowding of hospitals introduces many serious problems; conspicuous among them is the need for precautions against fire hazards. A number of the hospitals are housed in old buildings whose construction is far from being fireproof. All hospitals, regardless of their age, should be officially inspected by competent authorities at least once a year. Inspectors should go on record promptly as having notified the hospitals in writing of any complaints, itemizing all violations of fire department requirements. A reasonable number of days should be stipulated in the written notice within which the hospitals should be expected to have the specified corrections made. If at the expiration of this period the itemized instructions have not been fully and satisfactorily carried out, court action should then be taken to compel compliance.

Inadequacies of hospital facilities.—It has been established in this survey that the city of Chicago requires 17,200 general hospital beds to meet the immediate need for hospital care. The community has a total of 17,425 beds in its general and specialized hospitals. These beds are distributed among the various types of medical services as follows: 1,902 beds for tuberculosis, 665 beds for mental dis-

eases, 597 for contagious diseases, 89 for chronic diseases, with an additional 400 beds occupied by chronically ill patients, although they are not assigned to this type of service, and the remaining 13,772 beds for general care. The existing facilities for the care of patients with acute conditions are insufficient to meet the bed need of the community. There is a deficiency of general hospital beds in Chicago of at least 3,500 beds.

The bed requirement for general care in Cook County exclusive of Chicago is 3,600 beds. Of the total 8,377 beds, only 1,851 beds are available for general care, which would indicate a deficiency of 1,700 beds for the care of patients with acute conditions.

The predicted demand for hospitalization has been calculated for a population considerably smaller than that now estimated for the area. The 20,800 general hospital beds may therefore be assumed to be a conservative prediction of the immediate bed requirements. It would follow that the deficiency of 5,200 beds would then be an underestimation of the extent to which the existing facilities fail to meet the needs of the Chicago-Cook County area.

These estimated bed deficiencies are all for general medical and surgical services. There are sufficient beds now available for the care of contagious diseases and maternity patients. Inadequacies of the facilities for the care of chronic diseases, mental diseases, and tuberculosis are considered in other sections of this report and have been excluded from the present discussion.

On the assumption that 20 percent of the hospital beds for general care should be available at government expense, the Chicago-Cook County area should have 4,200 beds in tax-supported institutions for this type of service. Governmental hospitals in the area are at present carrying their proportionate share of the service load. The tax-supported institutions now have 21 percent of the beds for general care, and during 1945 provided 19 percent of the days of care rendered, exclusive of services for patients with mental diseases, tuberculosis, and contagious diseases. Of the existing 15,623 beds for acute conditions, 3,239 are in government hospitals; and of the 4,461,465 patient days of care rendered, 844,127 days were given by these hospitals. Provision in the tax-supported institutions, however, is still short of that required to meet the anticipated demand for hospital care at government expense. An additional 1,000 general hospital beds are needed in these institutions.

In Chicago 24 percent of the beds for the care of acute conditions

are in government hospitals, and during the year covered by this survey 22 percent of the patient days of care rendered were in the tax-supported institutions. Although these proportions reveal a favorable balance in the service load carried by the government hospitals, the actual number of beds available in them is insufficient to care for the estimated demand. In Chicago and in the area outside Chicago additional beds for this type of service in government institutions are needed.

When additional beds for acute conditions are provided in the tax-supported institutions, they should be located in areas not now conveniently served by existing facilities. It is suggested that branch hospitals of the Cook County Hospital be established, one to be in the northern section and one in the southern section of the area, preferably. These branch hospitals should be developed as branch units and as extensions of the outpatient department of the Cook County Hospital. Cases requiring diagnostic and therapeutic facilities or specialized professional care not provided in the branch hospitals and all cases requiring extensive or prolonged hospital care should be transferred to the Cook County Hospital.

Until such branch hospitals can be established, it is suggested that serious consideration be given to the utilization of a section of the Oak Forest Infirmary as a branch hospital for acute conditions, emergencies, and outpatient care for residents in the southern section of Cook County.

Hospitalization facilities for Negroes is a growing problem in the area. Existing facilities available to Negroes are inadequate to meet the present demand and far below the estimated need for the immediate future. The situation is further complicated by the fact that a large number of them carry prepaid hospitalization service, for which they pay at the same rate as other subscribers. One of the hospital care plans advertises that it will provide complete hospitalization coverage in semiprivate rooms in any of the eighty-five approved hospitals. Negro subscribers find, however, that the doors of most of these hospitals are closed to them. Relatively few hospitals in the area accept Negro patients at all, and those that do, take them only on an emergency basis.

The policy of a number of the hospitals is to limit the admission of Negroes to those who can pay for private room services. Usually the Negro patient is unable to pay for a private room. If he happens to be a hospital service plan subscriber, his benefits call for full cov-

erage only in a semiprivate room. He is therefore automatically excluded from these institutions. In these hospitals the procedure followed routinely is to transfer Negro patients who cannot pay for private rooms to Cook County Hospital, which then is indemnified by the service plan. The effect of this policy not only places an added burden on the already overcrowded Cook County Hospital but also deprives the Negro subscriber of the general hospital services for which he has paid insurance.

From information submitted to the survey staff it is estimated that half the admissions to Cook County Hospital are nonwhite patients. In view of the fact that only about 10 percent of the population of the area is nonwhite it is apparent that this large government hospital is providing a disproportionate share of the hospital care rendered to nonwhite residents.

Negro patients are admitted to the outpatient departments of the majority of hospitals operating such departments, but when hospitalization is required, the patient is transferred elsewhere. It has long been recognized that the best medical care can be provided more efficiently and economically when the inpatient and the outpatient services are correlated in the same institution. The transfer of Negro outpatients to other institutions for hospitalization diminishes that advantage.

Adherence to the policies of segregation, of limitation of admission to emergencies, and of similar practices leaves the Negro patient who is financially able to pay for hospital services with no alternative except to seek hospitalization at Cook County Hospital, as the two hospitals operated for Negroes can meet only a small part of the demand for hospital care. A liberal policy on the part of Cook County Hospital of accepting, under the guise of emergency cases Negro patients who are able to pay for their hospital services has ameliorated the situation, but the practice does not solve the problem. Essentially it is a problem of the voluntary hospitals in this community, and it must be faced frankly by them.

HOSPITALS AND PUBLIC HEALTH Hospitals should play an increasingly important role in community health programs. In the past they have restricted their activities primarily to the provision of facilities and services for the diagnosis and care of ill patients, while other health agencies have directed their major efforts toward the prevention of illness and the enforcement of laws and regulations for the protection of the health of the community. Although this

sharp distinction between the activities of hospitals and those of public health agencies has become more narrow as the body of scientific knowledge concerning prevention of diseases has grown and an appreciation of the value of good health has developed, in the main co-operation among them has been lacking. The various institutions and health agencies have continued to go their separate ways. The need for active co-operation and for a recognition of their interdependence should now be apparent.

With the reduction in the problems of acute contagious diseases and the greater emphasis on those of cancer, heart, and other chronic diseases, the mutual dependence of health agencies, hospitals, and physicians has been increased. Case finding in special fields, such as tuberculosis and cancer, is assuming more and more importance. Health agencies locate the cases, and the hospital or clinic treats them.

Hospitals give evidence of their interest in community health problems by participation in immunization programs, tuberculosis case-finding studies, and venereal disease control. In general they are now aware that a good prevention program in the community will relieve hospitals and clinics of the care of many cases which otherwise would ultimately come to them for terminal care. To attain the optimum in community health programs for tuberculosis, venereal diseases, and maternal and child welfare, close co-operation between public health agencies, hospitals, and physicians is necessary.

Tuberculosis.—Emphasis on case finding will often result in the discovery of tuberculosis in its minimal early stages and will contribute greatly to the control of this disease. Routine radiographic chest examinations of all admissions to either hospital or clinic would provide an important channel for discovering such cases. This procedure is followed in only a few hospitals at present. Its extension to all hospitals, both voluntary and tax supported, would make a significant contribution to the improvement and protection of health in this area. Through use of photofluorographic units these routine examinations could be made at a minimum cost. Co-operation with health departments through the joint use of X-ray equipment would yield maximum benefits without duplication of equipment or effort.

The problem of hospitalization and care of tuberculosis cases was discussed in Chapter 26.

Venereal diseases.—Recent advances in the treatment of venereal diseases have reduced the length of treatment from months to days. Although many cases can be handled in outpatient departments, a

large number require the careful control and supervision which can be given only in hospitals. A close working relationship between hospitals and the venereal disease clinics operated by health department units would yield more effective control and better results.

Cancer.—Since older persons constitute a larger and larger proportion of the population, cancer and other chronic diseases are assuming greater importance in the field of community health. Whereas formerly emphasis was placed upon communicable diseases, stress should now be given to diseases associated with the aged. This problem is theoretically receiving considerable attention, but there is little activity except in the field of cancer and its control. Some institutions in Chicago are planning units for diagnosis, treatment, and research in the field of chronic diseases, but none have progressed much further than the planning stage. If the community is to derive the greatest benefit from the programs now expected for the future, it is essential that the plans of interested private organizations and agencies be correlated with those of the public health units.

Maternal and infant welfare.—For many years hospitals have participated actively in public health programs for maternal and infant welfare through the establishment of prenatal, postnatal, and infant clinics. Chicago provides an excellent example of what can be accomplished in this field when the services of hospitals, public health units, and individual physicians are well co-ordinated. The premature-baby program of the Chicago Health Department has received national recognition, due in no small measure to the full co-operation given by the various agencies and individuals concerned in it. Extension of such co-operation and co-ordination to the entire infant welfare program through the operation of health department maternal and infant welfare clinics in hospitals, with joint utilization of staff and equipment not only would prevent duplication of effort and expense but also would result in greater benefits for the public and the participating groups—the health department, the hospitals, and the physicians.

HEALTH EDUCATION IN HOSPITALS AND CLINICS Public health education is an integral part of any good community health program. Hospitals, clinics, and public health agencies have a mutual interest in determining the scope and the direction of all the community's health education activities. From information obtained from questionnaires submitted by the hospitals it is estimated that approximately 40 percent of the hospitals in the Chicago-Cook County area

carry on some type of health education activity through the media of lectures, posters, exhibits, and/or films. This finding is encouraging, but there is no co-ordination of the activities of the institutions with those of the public health agencies. All hospitals should be active in disseminating health information to their employees and to the patients, their relatives, and their friends. When such isolated educational activities are co-ordinated with the general health education programs of the public health agencies, results will be more effective.

CO-ORDINATION AND CENTRAL PLANNING Co-ordination of services and joint planning among the hospitals in the area are conspicuously absent, particularly among the institutions under local government control. The present plan of operation of the five local government hospitals, with their various types of control and different interests, does not lend itself easily to concerted effort. The situation encourages the shifting of responsibility from one authority to another. Harmony in administrative policies is lacking, and the responsibilities for hospital care for those who cannot pay for it are neither co-ordinated nor correlated. As a result there is considerable overlapping and duplication of facilities for some services and a total lack of facilities for others.

The area has 3 municipal hospitals and 2 county hospitals. Two of the municipal hospitals are under the direct control of the Chicago Health Department (Municipal Contagious Hospital and Chicago Intensive Treatment Center); the other (Municipal Tuberculosis Sanitarium) operates under a directorate composed of 3 persons appointed by the mayor, 1 of whom is a member of the health department. The 2 county institutions (Cook County Hospital in Chicago and the Oak Forest Infirmary) are under the control of the Board of Commissioners of Cook County. These units frequently work at cross purposes, and any correlation of their services is vague. No progressive planning for the future can be undertaken intelligently by these government hospitals without a firm foundation of harmony and co-operation of efforts and co-ordination and correlation of facilities.

For the citizens of the Chicago-Cook County area to obtain the optimum of hospital and medical care from their tax-supported institutions, the establishment of a central co-ordinating and correlating authority should be given serious consideration. Such central authorities have been established in other metropolitan centers with

considerable success. In view of the close relationship and interdependency between hospitals and health departments, which daily is becoming more apparent and necessary, the city and the county health departments should be represented adequately in this central authority. The community, particularly the business and taxable interests, also should be represented.

From such a central authority the citizens can expect elimination of administrative conflicts, professional staff inadequacies, and the duplication of facilities. Economy and efficiency of operation and service will be enhanced. The truly colossal investment of the taxpayers in the erection, operation, and maintenance of tax-supported hospitals and the complexity and essential interrelationship and interdependency among these hospitals make necessary the establishment of a central operating authority that will be worthy of the trust and the confidence of the tax-paying public, the business and professional interests, and the local government agencies.

The development of the nongovernment hospitals in the Chicago-Cook County area has been without benefit of community guidance or planning. There has been some individual planning, but in general the hospitals are the products of special church or group interests, and consequently they do not fit into a definite community pattern as they would under an intelligent and comprehensive program. The survey has shown that with few exceptions the hospitals in the area are operated as separate and individual units, with resultant overlapping and duplication of facilities and services. Some essential services are inadequate on the one hand, and there is an overabundance on the other. Plans to meet the need for hospital services should be developed in a spirit of co-operation and in the interest of an efficient community health program.

Chicago is the locale of the headquarters of the American College of Hospital Administrators and the American Hospital Association. As such, this area should look to these national associations and to the administrators of local hospitals to furnish leadership and guidance in future hospital planning. The willingness of the hospital administrators to co-operate in community planning has been demonstrated by the formation of the Chicago Hospital Council. Since its inception in 1936, this council, consisting of representatives of institutions approved by both local and national professional associations, has fostered a closer relationship between itself and allied

organizations in the fields of health and welfare, to their mutual advantage.

RECOMMENDATIONS

It is recommended that:

1. A total of 5,200 additional hospital beds for acute medical and surgical conditions shall be provided. This number does not include the 3,500 beds for nervous and mental patients not already hospitalized, the 3,000 beds for tuberculous patients,⁵ or the 5,500 beds for chronic invalids recommended in other chapters of the survey report.

2. Approximately 1,000 of the 5,200 additional general hospital beds shall be provided in tax-supported institutions.

3. At least 400 of the 1,000 new government-controlled beds shall be provided in two branch hospitals of the Cook County Hospital—one in the northern part of the county and one in the southern part.

4. These two hospitals shall be operated as branch units and as extensions of the outpatient department of Cook County Hospital.

5. A section of Oak Forest Infirmary shall be converted to the branch unit of Cook County Hospital for the southern area of the county recommended in recommendation No. 3.

6. A permanent authoritative group shall be established for planning and co-ordination of hospital facilities and services and for reviewing and approving proposals for capital expenditures for all future construction in the interest of organized care of the sick; that the membership of this group shall represent city and county governments, nonprofit and proprietary hospitals and nursing homes, professional groups, business interests, labor, and organized charity—both public and private agencies.

7. The development of hospitals of over 100-bed capacity shall be encouraged.

8. No hospital of less than 100-bed capacity shall be permitted in the metropolitan area.

9. The existing hospitals of less than 100-bed capacity shall be encouraged to affiliate with larger institutions to provide more comprehensive service.

10. There shall be a close integration between the organization of the small and that of the larger hospitals.

11. General hospitals shall be encouraged to accept chronically ill patients for diagnostic and therapeutic care.

⁵ Includes approximately 800 beds to replace obsolete beds (see Chapter 26).

12. The general hospitals shall review their policies, with the intent to provide a more comprehensive service, particularly in regard to the admission and care of tuberculous, mentally ill, and contagious cases.

13. All hospitals shall institute routine radiological chest examinations for tuberculosis of all patients admitted to hospital or clinic.

14. All hospitals shall institute serological tests for syphilis of all patients admitted to hospital or clinic.

15. All hospitals shall co-operate with the official public health agencies in the extension of their programs of preventive medicine.

16. The existing hospitals not approved or registered by the American College of Surgeons or the American Medical Association shall make every effort to warrant approval and admission to registration.

17. Hospital facilities and services shall be available to all patients on the basis of need and ability to pay, without regard to race, color, or creed and without segregation.

18. Hospital staffs, nursing schools, and other professional and nonprofessional departments of the institutions shall be open to the various minority groups on the basis of qualifications.

19. Periodic fire prevention inspections of all hospitals in Chicago shall be instituted immediately, with an effective follow-up program to eliminate existing fire hazards and to prevent the development of future fire hazards in hospitals.

20. The controlling agencies of hospitals whose construction is not fire resistant shall take immediate steps to convert or to replace such buildings by fire resistant structures.

21. The controlling agencies of hospitals having building units which are obsolete because of construction or age shall take steps to rehabilitate or replace such units as rapidly as is consistent with availability of materials.

22. In general, the policy of having physicians in active practice in a hospital serve on its board of directors or placed in control of the hospital shall be considered unacceptable, as this policy is not in conformity with those advocated by the national accrediting professional associations and in tax-supported hospitals is definitely contrary to good administrative practices; furthermore, in the tax-supported hospitals in the area where this policy is in effect immediate action shall be taken to relieve the staff physician or physicians of all responsibilities of control.

23. The controlling authorities of the two government hospitals not approved by the national professional associations shall take immediate steps to obtain approval.

24. The present policy of caring for public charges in voluntary hospitals at government expense shall be encouraged and extended.

25. The acceptance of private patients by tax-supported hospitals at the patients' own expense shall be made possible when voluntary hospital facilities are not readily available to them.

26. The communicable disease unit of Cook County Hospital shall be closed, and arrangements shall be made with the Municipal Contagious Disease Hospital to care for such county cases as require hospitalization for contagious diseases.

27. The Isolation unit of the Municipal Contagious Disease Hospital shall be closed.

28. Suitable legislation shall be enacted to provide a commission of eight members to operate city and county owned hospitals, sanatoria, and public emergency ambulance services through the employment of a qualified hospital administrator as executive director of the commission and of qualified assistants appointed by him to be in charge of the main divisions of service. Included among the special divisions should be the divisions of general hospitals, tuberculosis units, mental hygiene, and public emergency ambulance services.

29. The membership of the commission recommended in recommendation No. 28 shall consist of the Chicago health officer, the county health officer, and 6 other members, 3 to be appointed by the president of the Board of Commissioners of Cook County with the approval of the Board of Commissioners, and 3 to be appointed by the mayor of the city of Chicago with the approval of the Chicago City Council from a list of candidates to be submitted by a nominating committee composed of representatives designated by each of the following community organizations: Chicago Medical Society, Chicago Hospital Council, Council of Social Agencies of Chicago, Chicago Federation of Labor, Chicago Industrial Union Council, and Chicago Association of Commerce. One of the 6 members should be a Negro.

OUTPATIENT DEPARTMENTS AND ALLIED INDEPENDENT CLINICS

by *Edward T. Thompson, M.D.*

THE AMBULATORY SICK constitute by far the greater proportion of persons requiring medical care. For this reason provision for care to persons while they are in an ambulatory stage of disease is of paramount importance. Many general and special hospitals endeavor to maintain some type of facilities for the care of the ambulant sick. The character of these services and the scheme of organization under which they operate vary widely. Generally, however, outpatient departments of hospitals have one characteristic which is common to the group: they provide medical care for the large number of otherwise self-supporting persons who are unable to pay the fees of physicians in their private offices and for those individuals who are legally indigent or partially dependent.

Well-organized outpatient services are real assets to a community. Although many of their contributions cannot be evaluated in dollars and cents, their importance is reflected in numerous health and welfare activities through which incidence of disease has been lowered. Noteworthy among these are immunization and infectious disease case-finding programs and other preventive measures. Direct economic benefits from outpatient services are evidenced by a decrease in the need for hospitalization and a shortening of the stay in the hospital. Treatment at the clinic while the patient is in an early stage of disease may make hospitalization unnecessary and thereby save the expense of bed care. On the other hand, when the patient has been hospitalized the length of his stay in the hospital may be reduced if treatment can be continued in the outpatient department clinics. Outpatient departments thus serve to lower the cost of treatment to both the patient and the hospital.

In the present study of facilities for medical care of ambulatory patients in the Chicago-Cook County area the scope of the investiga-

tion was restricted to those facilities which offer service in several major branches of medicine. It excluded services organized for a single specialty, such as clinics associated with tuberculosis sanitariums, mental and venereal disease institutions, and the medical conferences and immunization programs at stations conducted by public health units. Although some of the facilities included limit their services to the care of certain types of patients or conditions, they all operate as polyclinics, providing services in at least three major medical branches, such as internal medicine, surgery, obstetrics, pediatrics, and orthopedics.

Data were gathered through questionnaires submitted to the hospital authorities or to the directors of the outpatient facilities and through conferences with those in charge of the services. Information was sought with respect to the number and distribution of the existing facilities, the extent of the services offered, the number of patients availing themselves of these services, the number of visits these patients made in a year, the general policies of admission and of follow-up of patients, and other pertinent facts concerned with the organization and administration of the outpatient facilities.

OUTPATIENT FACILITIES AND THEIR USES

There are 34 outpatient services in Chicago-Cook County which operate as polyclinics. For purposes of clarity, facilities which are associated with general or special hospitals are referred to in this report as outpatient departments, and all the others included in the scope of the survey are designated as independent clinics. Of the 34 existing facilities, 25 are outpatient departments of hospitals, and 9 are maintained as independent clinics.

CLASSIFICATION AND DISTRIBUTION OF OUTPATIENT FACILITIES

The large majority of the outpatient services in the area are provided under the auspices of nonprofit organizations. All the independent clinics and twenty-one of the outpatient departments are operated by nonprofit groups. Classification of these facilities according to their controlling auspices is given in Table 154.

It will be noted from the table that 3 of the outpatient departments are associated with tax-supported institutions, and 1 with a proprietary hospital. The specific auspices under which the 9 independent clinics operate are as follows: 2 under church groups, 2 under settlements, 2 under medical schools, and 3 under independent nonprofit corporations.

TABLE 154. NUMBER OF OUTPATIENT DEPARTMENTS AND CLINICS HAVING POLYCLINIC SERVICES, CLASSIFIED ACCORDING TO CONTROL AND MAJOR TYPE OF SERVICE, CHICAGO-COOK COUNTY

| <i>Control and Type of Service</i> | <i>Total</i> | <i>Outpatient Departments</i> | <i>Independent Clinics</i> |
|--|--------------|-----------------------------------|--------------------------------|
| Controlling auspices | | | |
| State | 2 | 2 | |
| County | 1 | 1 | |
| Church | 6 | 4 | 2 |
| Nonprofit association | 24 | 17 | 7 |
| Proprietary | 1 | 1 | |
| Major type of service | | | |
| General | 26 | 19 | 7 |
| E.E.N.T. | 2 | 2 | |
| Obstetrics | 3 | 2 ^a | 1 |
| Pediatrics | 1 | 1 | |
| Orthopedics | 1 | 1 | |
| Venereal diseases | 1 | | 1 |
| Total polyclinics | 34 | 25 | 9 |

^a One general hospital limits its outpatient services to obstetrics and pediatrics.

Most of the outpatient departments are associated with general hospitals—20 with general and 5 with special hospitals. Two of these general hospitals and 1 of the special are under government control. All the other hospitals maintaining outpatient departments are under nonprofit auspices, with the exception of 1 eye-ear-nose-and-throat hospital, which is operated for profit.

Distribution of the outpatient services in the area is even more unequal than the distribution of hospitals. There is a dearth of facilities in large sections of Chicago and of the county outside Chicago. With one exception, all the facilities are located in Chicago—1 outpatient department is in Evanston. The majority of them are concentrated within three miles of the main downtown business district of Chicago, known locally as the Loop. Included among these are the 3 outpatient departments associated with tax-supported institutions—1 operated by the county and 2 by the state.

The poor distribution of outpatient services and the complete absence of tax-supported facilities in the outlying districts impose hardships on large numbers of individuals in the area. The great distance to be traveled and the cost of such travel may delay visits to outpatient services until the patients' condition has become serious or the disease is so aggravated as to require immediate hospitalization. This situation likewise discourages the return of patients for continued treatment and for follow-up care after they have been discharged from the hospital. As a result, the economic loss to the

patient is greater and the cost to the taxpayer for ultimate care is increased.

TYPE AND AMOUNT OF SERVICES RENDERED BY OUTPATIENT FACILITIES Although all the outpatient facilities included in the survey are of a polyclinic nature, eight of them restrict admissions to certain types of patients (children and/or maternity cases) or to patients having certain conditions (eye-ear-nose-throat ailments, orthopedic difficulties, or venereal diseases). In the lower section of Table 154 the major emphases of the different outpatient departments and clinics are indicated.

The number and the type of services available in the individual facilities vary widely. Very comprehensive and diversified services are offered in some, and only a limited number are provided in others. The range in types available is from 3 or 4 services to more than 40. Among the 26 true general polyclinics, the average number of different services offered is 16.

The following special services listed by one large outpatient department in Chicago indicate the wide variety of outpatient services maintained by some of the facilities: diagnostic, medical, allergy, arthritis, cardiac, chest, chiropody, dental, ear-nose-throat, eye, gastro-intestinal, genito-urinary, geriatrics, gynecology, hematology, immunization, maxillo-facial (oral surgery), metabolic, neurology, orthodontia, orthopedics, pediatrics, physical therapy, premature children, prenatal, psychiatric, psychosomatic, renal, skin, special studies, speech, surgery (general, hand, hernia, peripheral circulation, rectal, varicose vein), tumor, vaginitis.

All the large outpatient departments offer rather extensive services. In the smaller facilities the scope and diversity of specialization is limited, although these facilities accept patients suffering from similar conditions to those treated in the large outpatient departments.

Very few services are available for the diagnosis and treatment of tuberculosis, nervous and mental diseases, or of contagious diseases. Provisions for remedial dental services are also meager. Some type of dental service is offered by twenty-one of the thirty-four outpatient facilities, but usually it is limited to diagnosis and extractions. For a discussion of dental services for outpatients see Chapter 37.

The outpatient departments and independent clinics, through their immunization programs, routine laboratory tests for syphilis, and other types of preventive measures, can greatly assist in protect-

ing the health of the community. There is an increasing realization on the part of hospital and clinic directors of the importance of the preventive function of their outpatient services. However, the outpatient facilities in the Chicago-Cook County area do not take full advantage of preventive procedures in their regular programs.

With respect to the amount of time represented by clinic sessions weekly in the different facilities, there is considerable variation, even among those offering comprehensive services. The 26 true polyclinics provide an average of more than 150 session-hours of service weekly in their various units. The range in total time available in these is from 16 session-hours per week to 563 session-hours, and in the number of clinic periods per week, from 3 to 41. Although the majority of the general facilities hold at least 2 sessions daily (12 clinic periods each week), many of the facilities have not more than 1 session. In 6 of them fewer than 4 clinic periods are held per week—5 special outpatient departments and 1 general clinic.

It is obvious from these findings that a large number of the facilities are not being utilized to their full capacity. Ample provisions are apparently available in the area for a considerable increase in the size of the outpatient load.

USE OF OUTPATIENT FACILITIES During 1945 more than 262,000 persons were admitted to the outpatient services in Chicago-Cook County. On the basis of these figures it is estimated that at least 6 percent of the population of the area received some type of service in polyclinics during that year. The outpatient departments of hospitals carried 82 percent of this case load, and 80 percent of the visits were to these departments.

TABLE 155. NUMBER AND PERCENTAGE OF PATIENTS ADMITTED TO SERVICES IN OUTPATIENT DEPARTMENTS AND INDEPENDENT CLINICS, CLASSIFIED ACCORDING TO CONTROL AND TYPE OF FACILITIES, CHICAGO-COOK COUNTY, 1945

| TYPE OF FACILITY AND AUSPICES | NUMBER OF FACILITIES REPORTING | PATIENTS ADMITTED TO SPECIFIED TYPE OF FACILITIES | | | |
|----------------------------------|--------------------------------------|--|----------------|---------------|---------------|
| | | TOTAL PATIENTS | | GENERAL | SPECIAL |
| | | <i>Number</i> | <i>Percent</i> | <i>Number</i> | <i>Number</i> |
| Outpatient departments | 23 | 215,156 | 82.2 | 175,686 | 39,470 |
| Government | 3 | 74,917 | 28.6 | 59,934 | 14,983 |
| Nongovernment | 20 | 140,239 | 53.6 | 115,752 | 24,487 |
| Independent clinics | 9 | 46,785 | 17.8 | 25,808 | 20,977 |
| Total polyclinics | 32 ^a | 261,941 | 100.0 | 201,494 | 60,447 |

^a Total patients for 1945 were not reported by two nongovernment outpatient departments—one associated with a general hospital and one with a maternity hospital.

Table 155 indicates the number of outpatients admitted to thirty-two of the existing facilities, classified according to their controlling auspices and the type of institution—general or special. Two outpatient departments failed to report the number of admissions—one, a department of a general hospital, the other of a maternity hospital.

These outpatients made, on the average, 4.7 visits per patient during the year. A distribution of the total number of visits to the various services is given in Table 156 according to the auspices under

TABLE 156. DISTRIBUTION OF VISITS TO OUTPATIENT DEPARTMENTS AND INDEPENDENT CLINICS CLASSIFIED BY TYPE OF AUSPICES, CHICAGO-COOK COUNTY, 1945

| NUMBER OF OUTPATIENT VISITS | TOTAL REPORTING | NUMBER OF FACILITIES BY TYPE OF AUSPICES OUTPATIENT DEPARTMENTS | | INDEPENDENT CLINICS |
|-----------------------------------|--------------------|--|----------------------|------------------------|
| | | <i>Government</i> | <i>Nongovernment</i> | |
| Under 10,000 | 8 | .. | 3 | 5 |
| 10,000-24,999 | 8 | .. | 7 | 1 |
| 25,000-49,999 | 8 | .. | 7 | 1 |
| 50,000-99,999 | 5 | 1 | 2 | 2 |
| 100,000 and over | 3 | 2 | 1 | .. |
| Total | 32 | 3 | 20 | 9 |

which they operate. The number of visits ranged from a low of 2,266, in an outpatient department of a nonprofit special hospital for crippled children, to a high of 165,440 visits, in a large department of a nonprofit general hospital. Reference to the table will show that the majority of the outpatient departments reported at least 25,000 visits during 1945, a fourth of them having had more than 50,000 visits.

Outpatient departments of nongovernment hospitals accounted for more than half the visits, and those of the government hospitals for about one fourth of them. The proportionate distribution of the total visits among the different control groups is indicated in the first columns of Table 157.

The number of times patients return in a given period is one indication of the general quality of the service rendered by the outpatient facilities, in that it reflects the interest in follow-up care. It will be noted from Table 157 that the outpatient departments of the tax-supported institutions have the smallest number of return visits and the independent clinics the greatest number. The average number of visits per patient in the outpatient departments of government hospitals was 4.0, of the nongovernment hospitals 4.8, and in the independent clinics 5.3. The generally accepted standard for good care is 5 visits per patient per year. It is thus evident that in

TABLE 157. NUMBER OF VISITS TO OUTPATIENT DEPARTMENTS AND INDEPENDENT CLINICS, CLASSIFIED ACCORDING TO CONTROL AND TYPE OF FACILITIES, CHICAGO-COOK COUNTY, 1945

| CONTROLLING AUSPICES | NUMBER OF FACILITIES REPORTING | OUTPATIENT VISITS TO SPECIFIED TYPE OF FACILITY | | | | | |
|-------------------------|--------------------------------------|---|------------|------------------------|---------|------------------------|------------------------|
| | | TOTAL | | | SPECIAL | | |
| | | GENERAL | | | SPECIAL | | |
| | | Number | Percentage | Average per Patient | Number | Average per Patient | Average per Patient |
| Outpatient departments | 23 | 976,121 | 79.7 | 4.5 | 836,246 | 4.7 | 3.7 |
| Government | 3 | 297,926 | 24.3 | 4.0 | 240,544 | 4.0 | 3.8 |
| Nongovernment | 20 | 678,195 | 55.4 | 4.8 | 595,702 | 5.1 | 3.7 |
| Independent clinics | 9 | 248,095 | 20.3 | 5.3 | 142,987 | 5.5 | 5.0 |
| Total polyclinics | 32 ^a | 1,224,216 | 100.0 | 4.7 | 979,233 | 4.8 | 4.2 |

^a Two outpatient departments are excluded from the table—the department of a maternity hospital does not keep its records separate from those of the hospital, since all its patients eventually go into this hospital, and a department of a general hospital which limits outpatient services to maternity patients and children failed to report total visits in 1945.

many of the outpatient departments of both government and non-profit hospitals in the Chicago-Cook County area the services during the period covered by this survey failed to measure up to this standard.

General facilities.—The 26 outpatient departments and independent clinics rendering general services carried more than three-fourths of the total patient load. During 1945 these facilities cared for approximately 201,500 outpatients, who visited the services an average of 4.8 times in that year. The major part of this service was provided by the outpatient departments of general hospitals under nonprofit auspices, in which the average number of visits per patient was 5.1. As a group these outpatient departments would appear to be interested in a follow-up of their patients. In only 5 of the 16 departments of nonprofit general hospitals from which complete records were obtained, was the average number of visits per patient during the year less than 5.

Two of the outpatient departments of general hospitals are under government control. The average number of visits per patient in these was only 4. One of these, the large hospital operated by the county, cared for approximately 20 percent of the total outpatient admissions for general services during 1945. On the average, not more than 3.5 visits per patient were made to the outpatient department of this institution. In view of the large number of persons admitted to its services this low average, which is suggestive of serious inadequacies in the service, should receive the careful consideration of community and county authorities.

In the 7 general independent clinics an average of 5.5 visits was made by 25,808 patients. The 2 clinics associated with medical schools accounted for more than half of the total visits made to general clinics during 1945. Among the other independent clinics the average number of visits ranged from a low of 2.9 to 5.0 visits. Although as a group these general clinics met the standard for number of return visits, the averages of only 2 of the 7 were up to this level.

A summary of the findings regarding number of patients admitted to general and special outpatient facilities is shown in Table 155. The total number of visits made by these patients and the average number per patient are given in Table 157.

Special outpatient departments and clinics.—The special outpatient facilities in the area, although emphasizing some particular

branch of medicine, usually provide general services for the patients admitted for care. A number of them offer comprehensive services. In 1945 approximately 60,500 persons received care in the seven special facilities for which attendance records were available. On the whole these patients made fewer return visits for clinic service than the patients of the general facilities.

With two exceptions, the average number of visits during the year in the special outpatient departments and clinics was consistently below the standard set. An outpatient department of a children's hospital and an independent clinic for venereal diseases each reported an average of more than five visits per patient. The over-all average in 1945 for the special facilities was 4.2 visits per patient.

ADMINISTRATIVE PRACTICES

ADMISSION POLICIES Some type of restriction regarding the patient's status is imposed by most of the outpatient departments and clinics in this area. These restrictions concern the income level, race, age, religious or fraternal affiliations, and place of residence of the patient. In the large majority of the services eligibility is determined mainly on the basis of income level. Only 8 of the facilities reject applicants for other than economic reasons, and most of these have some limiting requirements regarding the income level. These 8 include 3 outpatient departments which restrict their services to white persons, 2 which accept children only, 1 which is conducted for a religious group, and 1 for the indigent members of the controlling fraternal organizations. The remaining 1 is operated by a railroad company for its employees.

As a primary function of the outpatient services is to provide medical care for persons who are financially unable to afford care by a private physician, in general practice the economic status is given first emphasis in determining eligibility. With three exceptions, all the outpatient facilities in the Chicago-Cook County area limit their services to the needy group known as the medically indigent. These exceptions include an outpatient department operated for profit, a department of a university hospital where patients are considered private patients and are charged the full cost of care, and the outpatient department conducted by a railroad company for its own employees. The other institutions use a budget scale established by the Council of Social Agencies of Chicago as an economic guide in determining whether the patient should be accepted for care. This

budget scale is reviewed periodically, usually at six-month intervals, or oftener if the situation requires it. Rapid and large changes in the basic cost of living during 1946, particularly in the increased cost of food and clothing, forced the outpatient departments and clinics to revise this scale upward without waiting for an official review. As these revisions were made individually, with no attempt to co-ordinate the changed items, there were several different scales in use at the time of the survey.

WAITING TIME OF PATIENTS No detailed study was made of the waiting period of patients. Through personal inquiry of some clinic directors and patients regarding the situation, it was learned that the time elapsing between the arrival of a patient at the outpatient department or clinic and his admission to the service for examination or treatment is considerable. It varies from a few minutes to several hours. Clinic directors attributed the delay to the shortage of attending physicians and to their tardiness in reporting to the service. Medical services are usually provided on a volunteer basis and are therefore not subject to the same degree of administrative control by the clinic director as are those of a paid staff. Although this should be recognized as a complicating factor, in the opinion of the surveyor it is not as important as other conditions which can be controlled. The acceptance of more patients than the facility is equipped to handle and the lack of a definite appointment system of scheduling are believed to be largely responsible for the long waiting periods.

DISTRICTING TO CONTROL SOURCE OF PATIENTS District control of patient attendance is not generally practiced by the institutions in this area. All the outpatient services, however, confine admissions to residents of Chicago and Cook County, with the exception of two outpatient departments of hospitals operated by the state and one associated with a nonprofit general hospital. The state-operated institutions serve the entire state of Illinois, and the other outpatient department accepts patients from neighboring states, as well as local residents.

In a number of large cities district limitations for outpatient departments and clinics have been found desirable and successful. Such a plan more closely associates the services with a particular area and reduces the length and cost of travel for the prospective patient. It also blocks the pernicious practice exercised by some patients of "clinic shopping." In communities where facilities are adequate to

meet the needs of the public and are appropriately located, districting to control the source of patients may not be necessary. This survey has shown, however, that the outpatient services in the Chicago-Cook County area are not well distributed and that many of them do not provide comprehensive medical care.

A districting plan for this area whereby the activities and services of the existing facilities and of those expected in the future could be co-ordinated would do much to alleviate overloading of individual institutions and to prevent overlapping and needless duplication of services. Special consideration should be given to problems of teaching, of specialized services, of the needs and interests of minority groups, and to the prejudices and established customs of the community. Only through the active co-operation of all the clinic directors and administrators can a district control program be effectively operated.

MEDICAL RECORDS AND STATISTICS Complete information regarding the records kept by the outpatient services was not obtained from all the institutions, but from the facts gathered certain significant deficiencies in the record-keeping practices are apparent. There is little uniformity in the type of medical records kept by the different facilities. Few of them make any attempt to correlate their outpatient and inpatient records. All the facilities which do correlate them use the unit record systems.

Not all the institutions classify the diagnoses made by their medical staffs. Four of the 21 from which information was available definitely stated that no classification was made of the diagnoses. Many different systems are employed by those which do classify them. Among them the *Standard Nomenclature of Diseases* is used by 7 outpatient services, the alphabetical system by 2, and the Ponton system by 2. Various other methods were mentioned by the remaining institutions.

Some type of attendance records is maintained by all the facilities in the area, but they are not always comparable in regard to either the count of individual patients served or the count of visits made by these patients during the fiscal year. Very few of the facilities compile statistics for the separate services within the outpatient department or the clinic. Without specific information on the attendance in these different services accurate reports as to the type and amount of care rendered by the institutions cannot be made.

PROFESSIONAL PERSONNEL Consideration of the professional

personnel of the outpatient facilities is here limited to the number and type of professional staff members who render direct service to outpatients. It was not practicable to attempt any detailed analyses as to the organization or quality of the care provided, because of the incompleteness of the information submitted by the institutions.

More than 1,300 appointments to the medical staffs of the 34 outpatient facilities in the area are reported. In the majority of the institutions at least one member of the medical staff receives remuneration for his services. Employment of one or more physicians on a paid basis was reported by 22 of the facilities—17 outpatient departments and 5 independent clinics. This number includes the teaching institutions which maintain outpatient services. A total of 238 physicians were receiving some remuneration for their work with outpatients at the time of the survey. Of these 115 were employed on a full-time basis and 123 on part time. The number in the different facilities ranged from 71 in a university outpatient department under state control to 1 in each of 6 nonprofit institutions.

Most of the outpatient facilities in the area depend primarily upon voluntary medical services. Twenty-one outpatient departments and clinics reported that a total of 1,055 physicians were serving on their medical staffs without remuneration. This is an average of more than 50 physicians to each of the facilities submitting reports. When it is recalled that the hours of clinic service averaged over 150 per week in the different institutions, the contribution to the care of the sick by members of the medical profession working in outpatient departments and clinics assumes a tremendous proportion. Yet this is only part of the voluntary contribution made to the care of the sick by the physicians in the Chicago-Cook County area.

Dental services offered in the outpatient facilities are discussed in Chapter 37. It should be noted here that 18 full-time and 44 part-time dentists are reported to be employed on a paid basis. Full-time dentists were reported by 5 of the outpatient facilities and part-time dentists by 14. Two facilities use dental hygienists. (A law regarding the services of dental hygienists was passed in Illinois in January, 1946, but at the time of the Chicago-Cook County Health Survey it had not been put into effect).

A total of 21 dietitians and nutritionists are included on the paid professional staffs of 15 of the outpatient services. Their special contribution to the care of the ambulatory sick is considered in Chapter 38.

Information regarding the number of registered nurses on their staffs was obtained from only 23 of the outpatient departments and clinics. These reported that 133 nurses were regularly used in their services, or approximately 6 nurses to each facility.

Other professional staff members reported by various departments and clinics include optometrists, psychologists, and technicians. The data submitted, however, were too indefinite to warrant analysis.

The use of medical social workers in connection with inpatient and outpatient services has increased rapidly during recent years. At the time of the survey medical social services were maintained by the majority of the outpatient departments and clinics in the area. One or more medical social workers was employed on the staff of each of 18 general and 7 special outpatient facilities. A detailed discussion of the services performed by these workers and the extent to which they are integrated with the medical care program is presented in Chapter 50.

LABORATORY FACILITIES

The laboratory facilities and equipment for diagnosis and treatment in the outpatient departments and clinics seem to be sufficient for the present type of services offered with some notable exceptions.

The use of clinical laboratory services was found to be almost universal. Only one outpatient department of a highly specialized small hospital is without laboratory facilities.

A pharmacy attached to the institution is available to all the outpatient services, with one exception. No information was obtained as to the arrangements made by this one outpatient department for dispensing the prescribed medicines.

X-ray equipment is available for outpatient services in 31 of the 34 polyclinics included in the survey. Two independent clinics and 1 outpatient department associated with a small specialized hospital lack X-ray facilities.

Electrocardiograph equipment for outpatient use was reported by 19 institutions and basal metabolism apparatus by the same number. Special equipment for ophthalmic examinations was said to be available in 23 of the outpatient departments and clinics, and audiometers in 12. Radium was available in 14.

STANDARDS OF SERVICE

The functions of outpatient services are generally considered to be: (1) care of the ambulant sick, (2) protection of community health,

(3) professional education of medical staffs, interns, and student groups, and general health education for staff members and patients. In the present survey no attempt was made to determine the extent to which the outpatient departments and clinics carry out these different functions. The quality of the service was judged entirely on the basis of whether or not the hospitals which maintain outpatient services have been accredited by national professional organizations. Minimum standards have been suggested by the American College of Surgeons for the operation of outpatient departments of hospitals and by the American Medical Association for internship and residency training through its Council on Medical Education and Hospitals. No special standards have been recommended for independent clinics.

All the 25 outpatient departments with the exception of 2 are associated with hospitals that have been approved by either the American College of Surgeons or the American Medical Association. Twenty-two of them meet the minimum standards of the American College of Surgeons; 21 departments meet those of the American Medical Association for residency and fellowship training, and 19 those for internship training. One of the independent clinics is also accredited by the American Medical Association for residency training in the special field in which this clinic places major emphasis.

With the present trend toward early ambulation after surgery or delivery, the services to patients in outpatient departments should assume even greater importance than they have in the past. In the interest of the patient's welfare these services should be required to meet acceptable standards of care. If the outpatient departments of nonapproved hospitals and independent clinics are to continue to serve the ambulatory sick, minimum standards should be established and strict compliance with these standards should be enforced in order to justify their continued existence. Standards for outpatient facilities in the area can be most expeditiously devised through joint action by the Council of Social Agencies of Chicago and representatives of local and national professional organizations.

COMMENTS

A well-organized and administered outpatient department is a valuable adjunct to any hospital and is a real asset to the community. By thorough clinical investigation and study of the patient in the clinic prior to admission to a hospital and by intensive follow-up

after discharge, the length of hospital stay can be reduced. In view of the present serious overcrowding of hospitals and the large number of patients awaiting admission, measures which can reduce the amount of hospitalization necessary should be used to the maximum degree. Any duplication of effort, such as a repetition of the clinical study of the patient, will decrease the value of the clinic to the community. Close co-ordination of the services of the clinics, hospitals, and health agencies will curtail and ultimately should eliminate needless duplication.

The findings of this survey have indicated certain serious inadequacies and deficiencies in the present provisions for outpatient care in the Chicago-Cook County area. There is a general lack of co-ordination of the services of clinics and hospitals, which is especially evident with respect to the admission of clinic patients for bed care and their follow-up after hospitalization. Clinic patients requiring hospitalization are not always admitted to the hospital with which the clinic is associated, but often must be admitted to another hospital. This is noted particularly in the case of Negro patients. The independent clinics experience even more difficulty in getting patients admitted for bed care than do the outpatient departments.

There is also the problem of the clinic records of these transferred cases. When patients are transferred from outpatient to inpatient status, either the clinical record or an abstract thereof should accompany the patient. Failure to transfer the clinic's findings results in duplication of study by the accepting hospital if it desires to maintain a complete medical record of the patient. The few outpatient departments using the unit system of filing, by which the inpatient and outpatient findings are correlated, have no difficulties with records when the patient's status changes. In other outpatient departments and clinics the transfer of a patient means the transfer of the clinic record or an abstract of it. When the patient is to be transferred to a hospital other than the one with which the outpatient department is associated, the department is reluctant to release its record or even an abstract of it. Closer co-operation between institutions in reference to these records is suggested.

Incomplete coverage of all medical services in many of the facilities often forces patients who require treatment for more than one condition to seek further care at another clinic. It is realized that specialists are not available in all branches of medicine. In the more common specialties, however, a sufficient number are available in this

area to provide a service comprehensive in all but the more scarce specialties, such as brain surgery. From the standpoint of the patient, failure of clinics to maintain a comprehensive service is an important deficiency in the existing provisions for the ambulatory sick in the Chicago-Cook County area.

The waiting time before the patient sees the physician is undoubtedly in many clinics longer than it should be. Every effort should be made to reduce the period of waiting for service. To a person who is ill, waiting not only is tedious but also contributes considerably to the patient's discomfort and anxiety. When the waiting takes place in inadequate, congested, and interior rooms, with hard benches and poor ventilation, the physical and mental condition of the patient suffers. In clinics where more patients are registered than the physicians can care for, some patients may have to leave without service. This may necessitate another long waiting session. When the patient has traveled a considerable distance at a cost which he cannot easily afford, the postponed visit may impose a real hardship on him and may prevent his return for needed care.

The prolonged waiting periods in the clinics are the result of a number of conditions. In the opinion of the surveyor, the acceptance of more patients than the facilities can serve and the lack of a definite appointment system of scheduling are the primary factors responsible for these delays.

In those situations in which a waiting period is unavoidable full advantage should be taken of the opportunity for health education. Through the use of posters, lectures, demonstrations, and the distribution of pertinent literature the patient's interest may be caught, the waiting period made less tedious, and valuable health information be given him.

Outpatient departments and independent clinics, in common with hospitals, must contend with the problem of shortages of personnel—both professional and nonprofessional. Comments made in Chapter 46 regarding hospital personnel apply equally to clinics. Outpatient services, however, make a stronger appeal to volunteer workers than do hospitals. A contributing factor is the opportunity for part-time service, which the clinics can readily provide. Full advantage should be taken of the assistance of volunteers as a means of meeting the present shortage of clinic personnel.

Increased activity and demand upon the clinics was reported by many of the directors which under the present conditions of curtail-

ment of wartime production and the high cost of living is to be expected. Only eight directors reported any lessening of demands or decrease in activities. Four of the clinics stressed the increased demand for services by Negroes.

Special cognizance should be taken of the Cook County Hospital outpatient department, since it is the largest government-operated unit in this area from the standpoint of patients served. It is regrettable that the services available are not sufficiently comprehensive in scope to provide care in all branches of medicine. As a result of insufficient service, patients frequently must be referred to other outpatient departments or clinics for the services required. Other deficiencies worthy of note are the absence of adequate follow-up and lack of correlation between the outpatient and inpatient services.

RECOMMENDATIONS

It is recommended that:

1. A districting plan shall be instituted to prevent overlapping of activities.

2. Facilities for outpatients shall be provided by the Cook County Hospital at two branch hospitals—one to be located in the northern part of the county and one in the southern part.

3. Outpatient facilities for the southern part of the county shall be provided at the Cook County Infirmary until a new unit can be built.

4. Outpatient departments of a polyclinic character shall extend their services to provide a comprehensive medical service.

5. There shall be closer integration between hospitals and their outpatient departments with regard to the admission of patients from the clinic to the hospital.

6. The restrictions on the admission of patients to outpatient departments and clinics shall be on the basis of need.

7. There shall be closer co-operation between the budget committee of the Council of Social Agencies of Chicago and the individual outpatient departments and clinics with regard to the reviewing of the basic economic guide used to determine eligibility for outpatient services so as to prevent the use of divergent scales.

8. All outpatient departments and clinics shall be encouraged to extend their activities in the field of preventive medicine by providing routine chest examinations for tuberculosis, serological tests for syphilis, and immunizations for all patients admitted to their facilities.

9. All outpatient departments and clinics shall co-operate with the public health agencies in the extension of their public health education programs (see Chapter 39).

10. All outpatient departments and clinics shall arrange for the transfer of comprehensive clinical data upon the transfer of a patient from one facility to another.

11. More comprehensive and uniform statistical records shall be maintained by clinics and outpatient departments to facilitate studies, analyses, and comparisons.

12. Appointment systems shall be inaugurated by all outpatient departments and clinics to reduce the waiting time of patients.

13. Full advantage shall be taken of the assistance of volunteer workers in outpatient departments and clinics.

14. Outpatient departments and clinics shall restrict admissions to the number of patients who can be adequately served.

15. Outpatient departments and clinics shall inaugurate follow-up systems to assure more complete medical care for the ambulant sick.

PUBLIC EMERGENCY AMBULANCE SERVICE

by *Edward T. Thompson, M.D.*

ALL METROPOLITAN AND INDUSTRIAL CENTERS recognize that provision for emergency transportation of persons who have been suddenly stricken with illness or have met with accidents to a place where they may obtain treatment is a community responsibility. Many cities have established ambulance systems which are reported to be functioning efficiently and satisfactorily. Among these are New York, Milwaukee, Indianapolis, and Los Angeles. Chicago holds the conspicuous distinction of being the only large metropolitan area in the country without an ambulance service worthy of the name.

Over the years various arrangements have been tried in the Chicago-Cook County area, but with little or no success. An aroused public concern began to crystalize about 1936 into a determination to improve the situation. A steadily mounting accidental-death toll which has kept pace with the growing motor traffic was largely responsible for the public's demand for action.

Considerable time and thought have been given to the problem by civic-minded individuals, professional and business clubs, and medical and hospital organizations, each working in collaboration with special committees appointed by the Chicago City Council and the Board of Commissioners of Cook County. Noteworthy examples include the work of the City Club of Chicago and the Chicago Hospital Council, which have been untiringly active in their efforts to secure a practical and efficient program of ambulance service for the community.

In 1937 the Chicago Hospital Council was instrumental in forming a committee, composed of representatives from the principal medical and hospital organizations in the area, with the purpose of undertaking a thorough and comprehensive study of this problem. Unfortunately a report of the findings of this Joint Committee on Public Emergency Ambulance Service was not published until 1941, just prior to the second World War. Wartime restrictions and man power

shortages necessarily precluded the adoption of any of their recommendations. At that time it was impossible to procure either the desired equipment or the personnel to man it.

During the period covered by this survey scarcities continued to be acute, and costs of materials and services rose sharply. These conditions have had a deterrent effect upon immediate steps toward a constructive program. No real progress has as yet been made in securing effective emergency ambulance service for this area.

The problem is both vital and urgent. In the interest of saving human life and preventing and relieving suffering, it merits the most serious consideration. The present difficulties should serve as a challenge to the resourcefulness and leadership of this great metropolitan community. Co-operative action on the part of voluntary and municipal agencies to improve and expand the existing facilities should not, however, be delayed until such leadership has secured the adoption of an efficient ambulance system. Specific recommendations for immediate action looking toward an adequate ambulance service have been included in this survey.

AMBULANCE FACILITIES

A review of the facilities available for the removal, to hospitals and other places where treatment may be received, of victims of accidents or of persons having traumatic conditions or illnesses of an emergency nature revealed that as of July, 1945, Chicago's facilities consisted of 138 motor vehicles of various types. Among these were 44 ambulances, 43 police wagons, 36 squad cars adapted to carry a stretcher, and 15 regular squad cars. Only 11 of the ambulances are maintained by public agencies; the others are operated by voluntary agencies and by private concerns.

The public ambulances include ten under municipal ownership and one used by Cook County Hospital for transferring cases to Oak Forest Infirmary. One fully-equipped public ambulance is maintained by the Chicago Health Department for premature infants. The driver and the registered nurse who accompanies each trip are employees of the health department. Operation of the remaining nine municipal ambulances is distributed among four agencies—Chicago Health Department, Municipal Contagious Disease Hospital, Municipal Tuberculosis Sanitarium, and the Chicago Fire Department.

The Chicago Health Department operates 2 ambulances, equipped

only with stretcher, to transport cases of contagious diseases to and from the Municipal Contagious Disease Hospital. The drivers and accompanying physicians are employed by the health department. Two ambulances for transporting contagious cases are also maintained by the Municipal Contagious Disease Hospital, drivers and accompanying physicians of these being provided by the hospital. The Municipal Tuberculosis Sanitarium operates 1 ambulance. The remaining 4 municipal ambulances are under the control of the Chicago Fire Department.

In 1943 Chicago acquired by gift four modern and fully-equipped ambulances. These were placed in district fire department stations which were considered strategic centers, each ambulance serving a separate district. At the time of the survey the locations were: (1) 214 Lomax Place, just south of the central business section—the "Loop"; (2) 1641 West Lake Street, the near west side; (3) 1052 Waveland Avenue, the north side; and (4) 330 West 104th Street, the far south side.

The equipment of each of the ambulances now operated by the fire department consists of: a litter stretcher, two hanger stretchers, Corrigan (leg and arm) splints, wooden splints, metal splints, inhalator, gas masks, oxygen masks, first-aid kit, rubber sheets, rubber gloves, hot pads, hot water bottle, ice packs, towels, thermos bottles, axe, crow-bar, and lanterns. Each ambulance is manned by a crew of two men—a driver and an attendant—each of whom has completed a twelve-month special course in first-aid and ambulance techniques.

It should be noted that less than one third of the available facilities for emergency transportation in Chicago are ambulances. Police wagons and squad cars account for 94 of the 138 motor vehicles in use for emergency service. Most of the squad cars—36 out of 51—are so adapted that a stretcher can be carried by opening the back of the car and elevating the rear seat. The equipment of the police wagons and squad cars usually consists of a well-worn stretcher and a much-used blanket.

AMBULANCE SERVICE OF THE AMERICAN RED CROSS, CHICAGO CHAPTER

In a review of the emergency transportation facilities in Chicago and Cook County special mention should be made of the services provided by the American Red Cross. The Chicago Chapter of the American Red Cross is prepared to handle on a 24-hour basis three types of emergency services. These include: ambulance service for use in

disaster and emergency first-aid; disaster preparedness against fire, floods, and other calamities; and emergency first aid through first-aid stations maintained or set up for special parades and other large gatherings.

The Chicago Chapter operates 15 ambulances, 1 of which is equipped with a roller stretcher, and 14 with canvas stretchers. The latter have 2 stretchers to an ambulance, 1 being placed on the floor and 1 hung by straps. These are available in disaster and for special transportation as requested by the War and Navy departments and as required in meeting the needs of the families of veterans and service men.

In Cook County outside Chicago the Red Cross maintains 20 emergency first-aid stations strategically located throughout the County, those in the rural areas serving districts remote from hospitals. Present plans include the expansion of personnel and the establishment of 30 additional stations in Cook County.

Of the 20 stations now in Cook County, 9 are in the Northern Division, located in police stations at Evanston, Wilmette, Des Plaines, Morton Grove, Park Ridge, Niles, Skokie and Glencoe, and in Forest Preserve station, Division 2, at Niles. Four of the stations are in the Western Division: 2 in fire stations at Bartlett and River Forest, 1 in the Franklin Park Forest Preserve Division 3, and 1 in Melrose Park Police Station. Seven are in the Southwest Division: 2 in Forest Preserve Division 4 and Division 5 at North Riverside and Summit; 4 in police stations at La Grange, Hinsdale, Western Springs and Argo; and 1 in the fire station at Lemont.

Patients who cannot be discharged shortly after receiving first-aid treatment at the emergency station are transferred to the nearest hospital. If ambulance transport is required, the nearest available commercial ambulance is called.

USE OF FACILITIES

Under the existing conditions of ambulance service in Chicago it was not possible to obtain accurate figures on the number of calls received for emergency transportation or on the extent to which the different facilities were being utilized. The potential demand, however, can be estimated from official reports of the police department supplemented by other special records available from the Cook County Bureau of Public Welfare.

Records of the Chicago Police Department for 1945 show that

93,262 persons required emergency transportation because of accidents or sickness during that year. According to these records, during 1945 the average daily demand for emergency ambulance service was for 45 persons in motor accidents, 157 in nonmotor accidents, and 54 who were stricken with some illness that made it necessary to remove them to hospitals, physicians' offices, or their homes.

In the accidents reported by the police there were 5,873 persons injured fatally—472 killed in motor accidents and 5,401 in nonmotor accidents. These official police department figures classify all cases of sudden death as "accidental." Later inquests may reveal that the victim died from natural causes. Hence, the police figures and those published by the Bureau of Vital Statistics will not agree on the number of accidental deaths. The accuracy of diagnosis, however, does not affect the demand for emergency transportation for these cases.

Comparisons of the record for 1945 with that for 1940 show an increase of 20,847 cases of injury or emergency illness. These figures from the police department do not include sick patients or accident cases transported by private ambulances. The 93,262 cases reported in 1945 do not, therefore, represent the total demand for ambulance service. They serve, however, to indicate the potential demand in Chicago for public emergency ambulance service.

Further estimates of the demand for ambulance service, both private and public, and of the proportion of this need now being carried by the police department have been made from a report of the Cook County Bureau of Public Welfare on ambulance cases taken to Cook County Hospital during a week in October, 1945. During the week covered by the study 397 ambulance cases were taken to the Cook County Hospital, an average of 56 patients a day. Of these, 355 cases, or 89 percent of the total ambulance cases received during the week, were transported in Chicago Police Department wagons or squad cars; 38 cases, or 10 percent, were taken in private ambulances; and 4, or 1 percent of the ambulance cases, were moved by other means. The average distance traveled by these vehicles to Cook County Hospital was 8.5 miles. Longest distance covered was 23 miles.

In the course of one year, using these figures as the basis for estimation, it can be predicted that 18,500 patients must be taken by public ambulance to the Cook County Hospital alone. On the basis of the experience reported by the Cook County Bureau of Public Welfare

it is further estimated that during 1945 police vehicles transported approximately 84,000 of the potential 93,262 ambulance cases recorded by the police department. This would be a daily average of 230 cases removed by the police department to hospitals or to other centers where treatment could be given.

The four modern ambulances under the control of the Chicago Fire Department, although presented to the city in 1943, were not in full operation until January, 1946, because of the lack of man power during the war years. A report covering the first two months of active operation—February and March, 1946—indicates that as yet relatively little use is being made of these well-equipped ambulances. Only 190 runs were made by the four ambulances during this two-month period. These runs were distributed as follows:

| <i>District Station</i> | <i>Number of Runs</i> | <i>Average during February and March, 1946</i> |
|-------------------------|-----------------------|--|
| No. 1 | 57 | 1 run per day |
| No. 2 | 65 | 1.1 runs per day |
| No. 3 | 41 | 1 run every 1½ days |
| No. 4 | 27 | 1 run every 2¼ days |

From this unsatisfactory record it is obvious that if the city is to make full use of its equipment a widespread educational campaign is needed to inform the public regarding the availability of these public ambulances. In commenting on the extremely low rates of utilization of the four fully-equipped ambulances, a Chicago newspaper stated that "thirty of the runs were made for fire department men or members of their families, according to the records." That statement is particularly significant, since these ambulances are under the jurisdiction of the fire department and the thirty runs in question constituted about 16 percent of all runs made during the two-month period. Further comments and recommendations on this situation are given later in this chapter.

At the time of this survey no figures were available regarding the amount of service rendered by privately-owned and -operated ambulances. From information obtained in a sample study of physicians practicing in the area, however, an indication of the general character of the private ambulance service was secured. The majority of those who reported stated that in their opinion the private ambulance services were satisfactory—80 percent rated them as satisfactory, 15 percent as only fair, and 5 percent as poor.

COST OF AMBULANCE SERVICE

The four municipal ambulances under the jurisdiction of the Chicago Fire Department are the only public ambulances available in the area for transporting general emergency cases. Since these had been in operation for only a few months at the time the survey was made and since the facilities were not being fully used, the cost of maintaining the service was very high. The city fire marshal's office reports that a crew of five and one-half men per ambulance is required for a continuing service. Each man receives a salary of \$3,200 a year. On the basis of the 190 runs made in the first two months of service in 1946, the salary cost alone amounted to \$11,736, or an equivalent of \$61.78 per run.

Commercial ambulance service rates in the area are \$8.00 or \$9.00 for a daytime call, depending on the distance, and \$10 for a night call. Obviously, if the present experience of operating the four public ambulances were used as a basis for determining the cost of maintaining a municipal ambulance system, it would be much more expensive than hiring private ambulances to perform the service. The point is that the city has failed thus far properly to utilize its equipment. Before reasonable use can be expected, the public must be informed as to the accessibility of this service and the methods by which it should be utilized.

The study made in 1940 by the Joint Committee on Public Emergency Ambulance Service convinced its members that twenty modern fully-equipped ambulances was the minimum number required for the greater Chicago area at that time. With the increase in population since 1940, particularly in the industrial sections of the outlying districts, it is believed that at least forty public ambulances are now needed. Cost estimates made by the committee were based on price levels far below those of 1946. For example, the cost per ambulance was given as \$2,400, while the 1946 purchase price was from \$3,200 to \$3,500. The salary of each attendant was estimated at \$1,800 a year. Members of the fire department now serving in this capacity receive the standard salary scale of \$3,200 per year. Under conditions existing at the time of the Chicago-Cook County Health Survey, it is estimated that for an adequate service the over-all cost for the first year should not exceed \$500,000. This amount would consist of \$150,000 for purchase of the required new equipment, \$325,000 for maintenance, including salaries of crews and cost of upkeep, and

\$25,000 for administration. Against this expense would be a credit estimated to be \$150,000 which could be saved by discontinuing the present inefficient service rendered by the police department.

BASIC PROBLEMS IN PLANNING A PUBLIC AMBULANCE SERVICE FOR THE
CHICAGO-COOK COUNTY AREA

MUNICIPAL CONTROL A number of basic problems must be faced realistically if an adequate ambulance service is to be provided for this area. One of these relates to the advisability of developing a public ambulance system under municipal control. Active opposition to any extension of the public ambulance facilities has been expressed by the association representing private ambulance operators, on the ground that it would impose a heavy burden upon the taxpayers for a relatively small amount of service. Further, they point to the abuse of such free service by persons who although not really requiring ambulance transportation would insist upon it if it were available to them.

The operators' association has proposed that the city hire privately owned ambulances on an individual call basis as needed for accident and emergency cases. An annual appropriation of \$50,000 to \$70,000 would cover the expense and would provide the required services. They contend that this amount would be much less than the community would be forced to spend in acquiring new ambulances and in manning and maintaining them.

Other large cities now operating efficient ambulance services have demonstrated the value to the public of having municipal control of facilities rather than of using privately owned equipment. A successful service of this kind cannot be delegated. It requires very close co-operation between the ambulance service and the police or fire department, which would be impossible to achieve if privately owned equipment were used. The obligation to render this humanitarian service rests directly upon the local authorities, and the problem of developing it to the highest degree of efficiency is a civic responsibility which should not be transferred to private ownership for their profit.

The Board of Commissioners of Cook County is fully aware of the importance of establishing an adequate ambulance service in this area. The fact that most emergency cases are taken to Cook County Hospital keeps this matter constantly before the commissioners. An estimated 95 percent of all ambulance cases reaching Cook County

Hospital are from the city of Chicago. Lack of funds has been given as the reason the county has been unable thus far to give more than moral support to any proposed plan.

PROCUREMENT OF EQUIPMENT Another very real problem concerns the procurement of new ambulances. A subcommittee of the Chicago City Council has been authorized to receive bids for the purchase of ten additional fully-equipped modern ambulances. They report that several automobile manufacturers have submitted bids, but none has been satisfactory. This is largely due to the lack of certainty regarding delivery, because of the abnormal conditions existing in the motor industry. The bids received have been on the basis of furnishing only one motor ambulance, and its delivery could not be expected earlier than four or five months after receipt of the order. At the time of this review no bids had been considered acceptable. If the shortage of new motor vehicles continues to interfere with the purchase of fully-equipped ambulances, the temporary use of excess army and navy ambulance equipment should be considered as an immediate stopgap.

DECENTRALIZATION OF AMBULANCE SERVICE The placement of available facilities so as to secure their effective use is a significant part of the problem of providing adequate ambulance service. Several plans have been suggested, one of which favors a centralized service with the Cook County Hospital serving as headquarters for the public ambulance system for the area. The theory back of this plan is that the service should be county wide, and since Cook County Hospital is an established county institution and is centrally located it would be logical to utilize it as headquarters. The accessibility of the hospital will be even greater after the Congress Street highway development is completed.

Objection to this plan stems from a number of facts. Cook County Hospital is increasingly overcrowded, and although centrally located it is at a great distance from many of the densely populated districts and industrial concentrations—in some instances eighteen to twenty miles. Also, many of the trips to Cook County Hospital would have to be made through sections already congested by motor and streetcar traffic.

These facts seem to call for decentralizing the ambulance service. This should be done by locating most of the equipment in outlying districts and by planning to transport the emergency cases to nearby hospitals or to first-aid stations.

The needs of this area require that ambulances be stationed in strategic locations in or adjacent to dense concentrations of population and of industrial plants and that all possible emergency cases be diverted from Cook County Hospital to the approved hospitals nearest the sources of the emergency calls or to emergency stations.

PROVISION FOR EMERGENCY CARE An ambulance system organized on a satisfactory community basis must include co-operative arrangements with hospitals for emergency treatment of persons who have met with accidents or are suddenly stricken with illness and for their removal to the hospitals. These hospitals should have satisfactory emergency facilities and should be restricted to those under the control of nonprofit or government agencies. Each of these should have been approved by the American College of Surgeons and should be registered with the American Medical Association.

Since no emergency ambulance trip should require more than ten minutes and many sections of the Chicago-Cook County area are a considerable distance from any hospital, the establishment of first-aid emergency stations should be considered an essential part of the public ambulance service. Facilities of these stations should be adequate to render emergency treatment and care for cases requiring less than twenty-four hours of service. After appropriate first aid has been administered, patients requiring further medical care should be transferred promptly to the nearest approved hospital. Minimum standards of equipment for these stations should be determined by a board of control.

Co-operation with the American Red Cross would go far toward accomplishing the desired results with respect to emergency stations outside Chicago. Its present facilities of twenty first-aid stations plus the thirty now being planned should enable all sections of Cook County to have rapid and efficient emergency service.

JURISDICTION OF EMERGENCY AMBULANCE SERVICE Establishment of a public ambulance service presupposes an adequate and rapid communication system. The Chicago Fire Department, under whose jurisdiction the public ambulance service now operates, has a rapid and accurate communication system. From the standpoint of efficient and economical utilization of available city facilities, fire department stations would seem to be logical places to locate emergency ambulances, provided such locations are in or near strategic centers of population and industry. For these reasons the present arrangement would appear to be desirable, but when the sources are

considered from which most accident and emergency calls come, this method may be questioned. At present more than 90 percent of all emergency accident cases are handled by police wagons or squad cars. Generally, when an accident occurs, the bystander's first impulse is to call the police—it rarely occurs to anyone to call the fire department. The fire marshal's office reports that a few such calls come directly to the fire department, but in most cases the police relay the calls. It may thus be questioned whether the operation of an emergency ambulance service should not be the function of the police department.

Regardless of whether in final decision the ambulance service is placed under the jurisdiction of the fire department or under the police department, for the efficient functioning of the system there should be a special board of control with full authority and full responsibility. Such a board should be composed of outstanding professional and business men who would serve without compensation and have no financial interests in a hospital or other institutions in any way related to the ambulance service. For the Chicago-Cook County area it is recommended that the personnel of this board shall consist of representatives from the Chicago Hospital Council, from the Chicago Medical Society, and from a business organization such as the Chicago Association of Commerce, and 6 additional members, 3 of whom should be appointed by the Board of Commissioners of Cook County and 3 by the mayor of Chicago. This board should have the authority to employ a full-time manager of the public ambulance system and other necessary administrative personnel.

COMMENTS

A broad and specific program of education regarding the intelligent use of the available public ambulances is urgently needed. This program should be channeled through newspapers, public and parochial schools, industrial plants, and other influential institutions in the area. The educational campaign should place emphasis on methods of utilizing the service, that is, where, how, and when to call an ambulance. Meager as the community's present facilities are, they could be much more effectively used if the public were thoroughly informed. As each new piece of equipment is added, a continuing educational program should bring about the full utilization of all facilities and should accomplish much toward improving the emergency transportation situation. It would also mean the gradual retirement

of the present obsolete system of using police wagons for ambulances.

Under present conditions it is not practical to project a complete emergency ambulance program for the area. With respect to some details, the necessary course will be to follow expedients. Ways and means will have to be explored. Public emergency facilities should be made available to all persons needing such service, and no questions concerning the individual's ability to pay should be raised before furnishing the transportation. In many instances, after the service has been rendered it will be found that the patient is able to pay all or part of the cost and prefers to pay for the service he has received. The rate of charges for nonindigent emergency patients should be based on the standard charges made by operators of private ambulances.

At this time it appears out of the question to incur the expense of employing physicians as ambulance attendants. The use of interns is suggested as the alternative. A committee of the Board of Commissioners of Cook County favors establishing a standard rotating tour of duty to be required for interns—perhaps of thirty days—as part of the routine training. A similar program of ambulance service, if included in the intern instruction schedule of other co-operating hospitals, should make it possible to have a professional attendant available for each emergency call. A number of the hospitals will find it impossible to follow this recommendation at the present time because of a shortage of interns, but as the wartime demands for medical personnel decrease, there should be a corresponding increase in the available supply of interns. Experience thus acquired would be invaluable as part of the interns' instruction. In at least one city the ambulance service is regarded by interns as so important that they draw lots for the chance to participate.

A review of the ambulance services in the Chicago-Cook County area has indicated an urgent need for a co-ordinated public ambulance system. Additional equipment is immediately required, and plans should be made to effect the maximum utilization of the available ambulances under municipal control. Admittedly the forty new modern ambulances needed for the area cannot all be procured at the present time, but the program should get under way with whatever number can now be obtained. A board of control for the public ambulance system should start a campaign of education along with the acquisition of new equipment.

Many problems must be faced, but experience in handling them

as they arise should show the way for the development of an efficient, unified ambulance service.

RECOMMENDATIONS

It is recommended that:

1. The recently established public ambulance service shall be expanded and organized on an adequate basis.

2. This public ambulance service shall be either under the control of a special board or, if a hospital commissioner is appointed as recommended in Chapter 46, under the control of this commissioner through an assistant in charge of all emergency measures.

3. Co-operative arrangements between the public ambulance service and voluntary and government hospitals strategically located in the area shall be worked out so that maximum service can be provided to the public and available facilities can be used to full capacity.

4. Where voluntary and government hospitals do not exist, arrangements shall be worked out to establish ambulance services in the recommended district health units or in other available locations.

5. Medical services shall be provided for all public ambulances, preferably through the assignment of interns from the hospitals at which the ambulances are stationed.

6. A system of emergency aid stations shall be developed by the public authorities in co-operation with the American Red Cross so that emergency treatment may be accessible to all districts where hospital care is not readily available.

7. A comprehensive program of education with respect to the facilities and services of the public ambulance service shall be instituted.

8. Full advantage shall be taken of the advice and interest of those agencies and organizations in the community which are concerned in the promotion of public emergency ambulance service.

NURSING SERVICE IN HOSPITALS

by *Lucile Petry, R.N.*

DETERMINATION OF THE EXTENT to which a community meets its obligation to provide adequate hospital nursing services to its sick and a sound educational program to its prospective nurses, both professional and practical, is the first step toward planning to meet these obligations effectively.

The Chicago-Cook County Health Survey group, aware of the importance of nursing in hospitals, decided to include a study of this type of service in its over-all survey of the total health situation in the Chicago-Cook County area. Since time and staff were limited, four questionnaires were used in studying the following problems of nursing service: (1) the amount of nursing service patients in hospitals located in the Chicago-Cook County area were receiving from professional nurses, student nurses, and nonprofessional personnel; (2) the number and qualifications of professional nurses and related personnel; (3) the prevailing personnel practices in hospitals and their possible effect on attracting qualified personnel; and (4) the activities performed in hospitals by professional nurses and nonprofessional workers and the suitability of these activities to the personnel performing them.¹ Although analysis of nursing education was not one of the aims of the study, some of the implications for education are discussed in this chapter.

Despite a careful follow-up procedure, only sixty-seven of the ninety-seven hospitals in the Chicago-Cook County area which received questionnaires returned one or more, and not all the questions on the forms returned were answered by every reporting hospital. For this reason the statistics presented in tables and text are based on

¹The four questionnaires were distributed and explained at a meeting to which all directors of nursing services and hospital administrators in the area had been invited. It was agreed at this meeting that hospitals would not be identified by name in this report. The questionnaires were mailed or delivered personally to a number of hospitals not represented at the meeting (see Appendix 7 for list of hospitals which returned questionnaires).

replies from a varying number of hospitals and must be considered only in relation to the particular topic under discussion. The information given may or may not report conditions which are similar to those existing among the patient population of the nonreporting hospitals. The hospital data in this chapter should be read in relation to the general statistics presented in Chapter 46.

The considerable proportion of the patient population concentrated in government hospitals also must be taken into consideration in studying the statistics presented. The percentages in Table 158 bring out this point. Five government institutions (state, county,

TABLE 158. PATIENT CENSUS, BY TYPE OF SERVICE AND PERCENTAGE IN GOVERNMENT^a AND NONGOVERNMENT HOSPITALS REPORTING TO THE CHICAGO-COOK COUNTY HEALTH SURVEY, JULY, 1946

| TYPE OF SERVICE AND TYPE OF CONTROL | NUMBER OF HOSPITALS REPORTING | TOTAL PATIENT CENSUS ^b (SEVEN CONSECUTIVE DAYS IN JULY, 1946) | |
|---|-------------------------------------|--|-------------------|
| | | <i>Number</i> | <i>Percentage</i> |
| All services combined | 61 | 15,994 | 100.0 |
| Government | 5 | 5,926 | 37.1 |
| Nongovernment | 56 | 10,068 | 62.9 |
| Medical | 21 | 21,247 | 100.0 |
| Government | 4 | 14,010 | 65.9 |
| Nongovernment | 17 | 7,237 | 34.1 |
| Surgical | 19 | 18,586 | 100.0 |
| Government | 3 | 9,922 | 53.4 |
| Nongovernment | 16 | 8,664 | 46.6 |
| Obstetric | 38 | 14,923 | 100.0 |
| Government | 2 | 2,139 | 14.3 |
| Nongovernment | 36 | 12,784 | 85.7 |
| Pediatric | 20 | 7,612 | 100.0 |
| Government | 2 | 2,668 | 35.0 |
| Nongovernment | 18 | 4,944 | 65.0 |
| Psychiatric | 8 | 2,158 | 100.0 |
| Government | 1 | 916 | 42.4 |
| Nongovernment | 7 | 1,242 | 57.6 |
| Communicable diseases | 3 | 1,168 | 100.0 |
| Government | 1 | 249 | 21.3 |
| Nongovernment | 2 | 919 | 78.7 |
| Tuberculosis | 3 | 13,244 | 100.0 |
| Government | 2 | 3,059 | 23.1 |
| Nongovernment | 1 | 10,185 | 76.9 |
| Chronic diseases | 1 | 8,519 | 100.0 |
| Government | 1 | 8,519 | 100.0 |
| Nongovernment | .. | ... | ... |

^a State, county, and municipal.

^b In addition to the census reported for segregated services, 23,791 patients were reported for unsegregated services, all in nongovernment hospitals. The total census for nongovernment hospitals also included 713 patients in one eye, ear, nose, and throat hospital.

and municipal) accounted for 37 percent of the total patient census taken by 61 reporting hospitals over a period of 7 consecutive days in July, 1946.² Two of the 5 are large general hospitals; 3 are special institutions; 1 large and 2 small. In some clinical services, as the percentages in Table 158 indicate, these 5 hospitals reported daily average censuses which constituted even higher percentages of the total.

AMOUNT OF NURSING SERVICE

The amount of professional and nonprofessional nursing service which a hospital provides, measured in hours per patient per day, is one significant index of the adequacy of its nursing service. Certain other factors also must be considered in determining the excellence of care. Among them are the following:

1. The construction and arrangement of the hospital and its units.
2. The availability of first-class equipment.
3. The kind and frequency of treatments ordered by the medical staff and the simplicity or elaborateness of nursing techniques used in effectuating the therapeutic program.
4. The type of the medical staff and of medical activities, including characteristics such as the size of the visiting staff and the presence or absence of a medical research program in the hospital.
5. The administrative skills of executive personnel in charge of hospital and nursing services in the hospital and in its units.
6. The type of policies established by the institution or the lack of established policies.
7. The qualifications of all personnel and the controlled assignment of activities to suitable personnel.
8. The use of hospital facilities for educational programs for medical students, student nurses, medical technicians, nutritionists, and other types of students.

The following averages of bedside nursing hours per patient during each twenty-four-hour period have been recommended for use as norms or guides in staffing a ward unit in the services specified:³

²In 1943 the total of the average daily census for these 5 hospitals amounted to 43 percent of the total average daily census for the 61 reporting hospitals given in "Hospital Service in the United States," *Journal of the American Medical Association*, CXXX (April 20, 1946), 1102-1104.

³Excerpts from Tables 1 and 2, *Manual of the Essentials of Good Hospital Nursing Service*, Chicago, American Hospital Association and New York, National League of Nursing Education, 1942, p. 38.

| <i>Type of Service</i> | <i>Average Hours per Patient (Ward and semiprivate)</i> |
|------------------------|---|
| Medical | 3.2 |
| Surgical | 3.2 |
| Mixed | 3.2 |
| Obstetric | |
| Mothers | 4.2 |
| Newborn | 2.3 |
| Pediatric | |
| Infants | 5.5 |
| Older children | 4.3 |
| Communicable disease | 4.7 |

The norm recommended for private patients on a mixed medical and surgical service is 5.4 hours, and on an obstetric service (for mothers), 6.5 hours.

The recommended minimum percentage of total bedside nursing hours to be provided by graduate nurses in hospitals where students are part of the nursing service personnel is as follows:⁴

| <i>Type of Service</i> | <i>Percentage of Total Bedside Nursing Hours (Ward and semiprivate)</i> |
|------------------------|---|
| Medical | 31 |
| Surgical | 31 |
| Mixed | 31 |
| Obstetric | |
| Mothers | 51 |
| Newborn | 61 |
| Pediatric | 12 |
| Communicable disease | 37 |

The recommendations for private services are as follows: mixed medical and surgical, 91 percent; obstetric, (for mothers) 86 percent.

These norms were published for the first time in 1940 and were based on a study made even earlier.⁵ Since that time nursing has become more complex and time-consuming, particularly for acutely ill patients, and generally speaking the average length of the patient's hospital stay has decreased. These facts indicate that turnover of pa-

⁵ Blanche Pfefferkorn and Charles A. Rovetta, *Administrative Cost Analysis for Nursing Service and Nursing Education*, Chicago, American Hospital Association, and New York, National League of Nursing Education, 1940.

⁴ *Ibid.*

tients and the percentage of acutely ill patients have increased. It is believed that the employment of nonprofessional workers and the use of volunteers also have increased. The norms are used, however, for comparative purposes in discussing the hours of nursing service provided in the reporting hospitals.

The sixty-one reporting hospitals had a total average census of 15,994 patients during the survey week and provided 231,735 hours of nursing service.

The hours of nursing service were analyzed by type of personnel giving service: professional nurse, student nurse, or nonprofessional worker. The average hours of service per patient in each twenty-four-hour period in the reporting hospitals were compared by hospital control and by size of hospital. Comparisons were made also of the average daily hours of nursing service among certain clinical services and among certain types of accommodations. Special nursing given to 714 patients by private duty nurses was not included in the tabulations. This omission has no appreciable effect on the conclusions drawn from the nursing service statistics, since the number served was so small.

NURSING SERVICE BY TYPE OF HOSPITAL. Table 159 shows the average daily hours of nursing care per patient provided in general and in special hospitals by graduate professional nurses, student nurses,⁶ and nonprofessional workers, together with the percentage of total nursing care contributed by each group. The category "nonprofessional workers" includes all workers defined by the hospitals as practical nurses, attendants, orderlies, and volunteer nurse aides. Statistics for the general hospitals are presented by type of control also.

The sixty-one reporting hospitals averaged 2.1 hours of nursing care per patient in each twenty-four-hour period, 0.6 hours by graduate professional nurses, 1.1 hours by students, and 0.4 hours by nonprofessional personnel. The average of 2.1 hours for all types of nursing care indicates that hospital patients in Chicago and Cook county receive, on the average, only two thirds of the 3.2 hours of care recommended for patients in medical and surgical wards (the services on which least nursing is required). General hospitals provided the highest number of hours of service (2.7), and special hospitals, the lowest (1.0). The average number of hours provided by the three unclassified hospitals was 2.3. The low number of hours

⁶ Questionnaires were sent to 42 hospitals with schools of nursing, 33 of which returned one or more (see Appendix 8).

TABLE 159. AVERAGE AMOUNT AND DISTRIBUTION OF GENERAL NURSING SERVICE PER PATIENT DURING 24-HOUR PERIOD, BY TYPE OF HOSPITAL, CHICAGO-COOK COUNTY, JULY, 1946^a

| TYPE OF SERVICE ^b AND TYPE OF CONTROL | NUMBER OF HOSPITALS | | HOURS BY TYPE OF PERSONNEL | | | NURSING CARE PER PATIENT | | | PERCENTAGE BY TYPE OF PERSONNEL | | |
|--|---------------------|-----------|----------------------------|----------|---------|--------------------------|----------|---------|---------------------------------|---------|-----------------|
| | | | Total | | | Graduate | | | Graduate | | |
| | Listed | Reporting | Total | Graduate | Student | Nonprofessional | Graduate | Student | Graduate | Student | Nonprofessional |
| General | 66 | 44 | 2.7 | 0.7 | 1.5 | 0.5 | 26 | 56 | 26 | 56 | 17 |
| Nonprofit | 33 | 22 | 2.9 | 1.0 | 1.5 | 0.5 | 33 | 51 | 33 | 51 | 16 |
| Church | 27 | 18 | 2.7 | 0.6 | 1.8 | 0.3 | 23 | 65 | 23 | 65 | 12 |
| Proprietary | 4 | 2 | 2.4 | 0.3 | 1.6 | 0.4 | 13 | 68 | 13 | 68 | 18 |
| Government | 2 | 2 | 2.3 | 0.5 | 1.2 | 0.7 | 22 | 50 | 22 | 50 | 28 |
| Special ^c | 23 | 14 | 1.0 | 0.3 | 0.3 | 0.3 | 33 | 34 | 33 | 34 | 33 |
| Unregistered | 8 | 3 | 2.3 | 0.8 | ... | 1.5 | 35 | .. | 35 | .. | 65 |
| All types | 97 | 61 | 2.1 | 0.6 | 1.1 | 0.4 | 28 | 52 | 28 | 52 | 20 |

^a Values are shown to the nearest tenth of an hour, or the nearest whole percent. Subtotals do not always add up, therefore, to exactly the total number of hours shown or the total of 100 percent.

^b The hospitals were classified by control and type of service according to the definitions given in the *Bulletin of the American College of Surgeons*, Vol. XXIX (Dec. 1946) and "Hospital Service in the United States" *Journal of the American Medical Association*, CXXX (April 20, 1946), 1102-1104.

^c The types of special hospitals reporting and listed were as follows: nervous and mental, 2 out of 7; maternity, 4 out of 6; children's, 3 out of 4; miscellaneous, 5 out of 6 (including eye, ear, nose, and throat, incurable diseases, communicable diseases, tuberculosis, and chronic diseases).

reported for the special hospitals results in part from the inclusion of institutions for custodial care in this group. The average was still low, however, when the custodial institutions were omitted in computing the average.

The variation in the average daily hours of care per patient provided by general hospitals under the specified types of control was not wide. The highest average (2.9 hours) was found for hospitals operated by nonprofit associations, and the lowest (2.3 hours) for those under government control.

Of the total nursing care given patients, graduate professional nurses provided 28 percent; student nurses in thirty-three institutions operating schools of nursing, 52 percent; and nonprofessional personnel, approximately 20 percent. In several hospitals the percentage of student nursing care reported was high. It is a question whether these hospitals meet proper standards for the safety of the patients and the quality of the students' educational experience.

While the percentage of care by nonprofessional personnel was highest in the government hospitals, it may not be unduly high, since many nursing activities can be performed satisfactorily by nonprofessional personnel. In fact, the rather low percentages found for the general hospitals under other types of control may indicate that professional nurses (graduates and students) are performing duties which could be turned over to the nonprofessional group. The low percentage of nursing service attributed to the nonprofessional group in comparison with the high percentages reported for students indicates that student nurses may be devoting their learning period to repetition of very simple activities, a wasteful practice educationally speaking. This comment is particularly applicable to the non-Catholic church hospitals, since in this group nursing care by nonprofessional personnel amounted to only 3 percent.

NURSING SERVICE BY SIZE OF HOSPITAL An analysis of the average daily hours of care per patient provided by 58 hospitals classified by size (average daily census of patients⁷) indicated that the 8 smallest hospitals, with less than 50 patients, gave the most care (4.9 hours), and the 3 largest, with 1,000 to 2,349 patients, the least (1.3 hours). The amount of care by hospitals of other sizes did not vary directly with the size of the hospital. The 14 hospitals in the 50-99 group and 6 in the 150-199 classification averaged 2.7 hours of

⁷ "Hospital Service in the United States," *Journal of the American Medical Association*, Vol. 130, April 20, 1946, p. 1102.

nursing care; the 9 reporting from 100–149 patients, 3 hours; and the 18 with from 200 to 249 patients, 2.6 hours.

NURSING SERVICE BY HOSPITAL UNITS OR CLINICAL SERVICES

Table 160 shows a classification of the reporting hospitals and the daily average census of patients according to the type of service and the hours of nursing care per patient received from each type of personnel. The hours of nursing care per patient calculated for the medical services in 21 hospitals is influenced markedly by 2 large government hospitals. The 1.5 average daily hours of care for patients on this service would become 2.4 hours if the medical units of these 2 hospitals were omitted.

Psychiatric patients, with an average of 6.8 hours per patient daily, communicable disease patients, with an average of 4.3 hours, and pediatric patients, with 3.8 hours, received the highest amount of care, measured in hours. The psychiatric institutions and psychiatric units of general hospitals included in this tabulation do not accept patients for long-term custodial care. The number of daily hours of care is not unduly high for institutions which offer predominantly diagnostic and therapeutic services and in which research and education are conducted.

In these three services, psychiatric, communicable disease, and pediatric, the percentage of total care contributed by students was also highest. Because clinical experience for students in these three fields is generally scarce, several schools send students for this type of experience to these hospital units. The fact that in pediatric and communicable disease nursing the number of hours of care per patient corresponds rather well with the recommended standard is therefore due to educational rather than to service planning. A plan to provide a similarly desirable number of hours of nursing care per patient for the large number of psychiatric patients in institutions without students would entail expenditure of considerable sums of money if paid personnel rather than students were used.

Should nursing school enrollments decrease, both the desirable hours of care per patient per day in these three services and the less desirable amounts in other services listed in Table 160 would diminish, unless student nurses were replaced by paid personnel.

The percentage of nursing service contributed by nonprofessional personnel was lowest in the communicable disease services. The next lowest percentage for nonprofessional personnel was found in the pediatric service. The presence of relatively high numbers of students

TABLE 160. AVERAGE AMOUNT OF NURSING CARE PER PATIENT DURING 24-HOUR PERIOD IN EACH TYPE OF CLINICAL SERVICE, CHICAGO-COOK COUNTY, JULY, 1946

| TYPE OF CLINICAL SERVICE | NUMBER OF HOSPITALS REPORTING | TOTAL DAILY AVERAGE GENSUS | HOURS PER PATIENT | HOURS BY TYPE OF PERSONNEL | | | PERCENTAGE BY TYPE OF PERSONNEL | | |
|----------------------------|-------------------------------|----------------------------|-------------------|----------------------------|---------|-----------------|---------------------------------|---------|-----------------|
| | | | | Graduate | Student | Nonprofessional | Graduate | Student | Nonprofessional |
| | | | | | | | | | |
| Nonsegregated ^a | 34 | 3,399 | 2.6 | 0.7 | 1.4 | 0.5 | 28 | 53 | 19 |
| Medical | 21 | 3,035 | 1.5 ^c | 0.4 | 0.7 | 0.4 | 29 | 45 | 27 |
| Surgical | 19 | 2,655 | 2.1 | 0.7 | 1.0 | 0.5 | 32 | 46 | 23 |
| Obstetric ^b | 38 | 2,132 | 2.6 | 0.9 | 1.3 | 0.4 | 35 | 51 | 14 |
| Pediatric | 20 | 1,087 | 3.8 | 0.5 | 3.0 | 0.3 | 14 | 78 | 8 |
| Psychiatric | 8 | 308 | 6.8 | 1.2 | 3.8 | 1.7 | 18 | 57 | 26 |
| Common diseases | 3 | 167 | 4.3 | 0.4 | 3.9 | 0.1 | — | 89 | 3 |
| Tuberculosis | 3 | 1,892 | 0.6 | 0.3 | 0.1 | 0.3 | 46 | 8 | 46 |
| Chronic diseases | 1 | 1,217 | 0.4 | 0.1 | ... | 0.3 | 14 | ... | 86 |
| E.E.N.T. | 1 | 102 | 1.2 | 0.7 | ... | 0.5 | 59 | ... | 41 |

^a Services in which patients from several clinical services are cared for in one hospital unit, usually mixed medical and surgical patients, occasionally several different types.

^b Includes both mothers and babies.

^c Two large hospitals with very low averages influenced this average markedly.

and low numbers of nonprofessional personnel in both pediatric and communicable disease services may indicate that students may be carrying a rather high number of nonprofessional functions. The low percentage of care given patients with communicable diseases by graduate nurses may indicate a need for study to determine whether the staffing by graduate nurses is sufficient to guarantee the patients' safety.

Surgical, medical, and obstetric services showed lower percentages than those recommended, which are considered low. These percentages indicate a need for an increased amount of nursing care. Even omitting one hospital with appallingly low hours in medical units, the average level is unfavorable.

The amount of nursing care available for patients with tuberculosis and with chronic diseases appeared extremely low, even when allowance was made for the many ambulant patients. A study should be made of the number of student nurses in Chicago who need experience with tuberculous patients. If this number should be high, it might be desirable to have students provide more nursing care to such patients than is shown in Table 160. In any case, the hours of care by graduate nurses and by nonprofessional workers should be increased.

Although data for all clinical services were available, Table 161 presents statistics for the medical services in only 21 hospitals. The distribution of nursing care by types of personnel was similar on the pediatric and surgical services. The highest average number of hours per patient per day (2.8) was found for 8 hospitals under the control of nonprofit associations, but even this average is considerably lower than the recommended standard of 3.2 hours for ward and semi-private patients. The 0.8 hours of care per patient per day calculated for the medical services of the 3 special hospitals is deplorably low. Two of these are municipal hospitals; 1 is a hospital for incurables under nonprofit association control.

The percentage of service rendered by nonprofessional personnel was highest in the 2 government and the 3 special hospitals (41 and 40 percent, respectively). Only 8 percent of the total nursing time in the 8 church hospitals was provided by this group. Two of the 8 reported no service by nonprofessional personnel, an indication that student and graduate professional nurses were devoting time to activities which might have been provided by nonprofessional workers.

TABLE 161. AVERAGE AMOUNT OF NURSING CARE PER PATIENT DURING 24-HOUR PERIOD ON TWENTY-ONE MEDICAL SERVICES IN HOSPITALS OF SPECIFIED TYPES, JULY, 1946

| TYPE OF SERVICE AND TYPE OF CONTROL | NUMBER OF HOSPITALS REPORTING | HOURS PER PATIENT | NURSING CARE PER PATIENT | | | PERCENT BY TYPE OF PERSONNEL | | |
|---|-------------------------------------|----------------------|----------------------------|---------|----------------------|------------------------------|---------|----------------------|
| | | | HOURS BY TYPE OF PERSONNEL | | | PERCENT BY TYPE OF PERSONNEL | | |
| | | | Graduate | Student | Nonpro- fessional | Graduate | Student | Nonpro- fessional |
| General | 18 | 2.3 | 0.6 | 1.1 | 0.5 | 26 | 53 | 21 |
| Nonprofit | 8 | 2.8 | 0.7 | 1.7 | 0.4 | 24 | 60 | 15 |
| Church | 8 | 2.6 | 0.6 | 1.8 | 0.2 | 25 | 67 | 8 |
| Government | 2 | 1.5 | 0.4 | 0.5 | 0.6 | 28 | 31 | 41 |
| Special | 3 | 0.8 | 0.3 | 0.2 | 0.3 | 35 | 25 | 40 |
| All types | 21 | 1.5 | 0.4 | 0.7 | 0.4 | 29 | 45 | 27 |

^a Not all hospitals had nursing schools.

NURSING SERVICE BY TYPE OF ACCOMMODATION In Table 162 the average amount of nursing care per patient has been analysed for the medical, surgical, and nonsegregated services according to the type of accommodations, ward, semiprivate, private, and combinations of these three types. Not all combinations of accommodations were available on every service.

The hours of care per day in 35 hospitals reporting medical services classified by type of accommodations ranged from 1.1 on the wards of 6 hospitals to 4.9 in 1 hospital which provided private care only. This hospital alone met the norm of 3.2 hours of care recommended for ward and semiprivate patients, but fell below the 5.4 hours recommended for private patients. Student nurses gave all the nursing care in this hospital. Among the 34 hospitals reporting surgical services, the daily hours of service per patient in the different categories ranged from 1.8 to 3.1, a narrower range than that found for the medical services. The nonsegregated services in 67 reporting hospitals showed an even slighter difference between the different types of accommodations, from 3.0 to 2.2 hours of nursing care per patient.

Nonprofessional personnel contributed 40 percent of the total nursing care on the surgical wards, 39 percent on the medical wards, and 47 percent on the nonsegregated private and semiprivate accommodations. The percentages of total care given by nonprofessional personnel were relatively low in the other types of accommodations on all clinical services, an indication that graduate professional and student nurses were undertaking activities which the nonprofessional group might have performed. The nonprofessional personnel gave no nursing care in the single hospital reporting private rooms only on the surgical service.

Medical and surgical services listed in Table 162 showed a rank order of percentage contribution by student nurses which corresponds very closely with the rank order of the total amount of care given patients over a 24-hour period. Hospitals which provide more nearly adequate care to their patients do so because of the presence of a school of nursing rather than because they plan to provide care by paid personnel.

NURSING SERVICE IN HOSPITALS WITH AND WITHOUT SCHOOLS OF NURSING Information was obtained about 33 of the 42 schools of nursing in the Chicago-Cook County area. All were in general hospitals. Sixteen of the 18 schools in nonprofit association hospitals re-

TABLE 162. AVERAGE AMOUNT OF NURSING CARE PER PATIENT DURING 24-HOUR PERIOD, BY TYPES OF PATIENT ACCOMMODATIONS—CHICAGO-COOK COUNTY, JULY, 1946

| TYPE OF CLINICAL SERVICE | TYPE OF PATIENT ACCOMMODATIONS | NUMBER OF HOSPITALS REPORTING | NUMBER OF SERVICE UNITS | HOURS PER PATIENT | NURSING CARE PER PATIENT | | | |
|----------------------------|--------------------------------|-------------------------------|-------------------------|-------------------|----------------------------|---------|---------------------------------|-----------------|
| | | | | | HOURS BY TYPE OF PERSONNEL | | PERCENTAGE BY TYPE OF PERSONNEL | |
| | | | | | Graduate | Student | Graduate | Student |
| | | | | | | | | Nonprofessional |
| Medical | Private only | 1 | 1 | 4.9 | .. | 4.9 | .. | 100 |
| | Ward and semiprivate | 6 | 6 | 2.8 | 0.4 | 2.1 | 16 | 76 |
| | Semiprivate and private | 7 | 11 | 2.0 | 0.4 | 1.3 | 22 | 63 |
| | Ward, semiprivate, and private | 15 | 22 | 1.5 | 0.5 | 0.6 | 32 | 43 |
| | Ward only | 6 | 20 | 1.1 | 0.4 | 0.3 | 31 | 29 |
| | All types | 35 | 60 | .. | .. | .. | .. | .. |
| | Semiprivate only | 2 | 5 | 3.1 | 0.5 | 2.2 | 17 | 71 |
| | Ward, semiprivate, and private | 16 | 23 | 2.8 | 0.9 | 1.7 | 31 | 61 |
| | Semiprivate and private | 7 | 11 | 2.6 | 0.8 | 1.7 | 30 | 64 |
| | Private only | 1 | 2 | 2.4 | 0.9 | 1.5 | 36 | 64 |
| Surgical | Ward only | 8 | 31 | 1.8 | 0.6 | 0.5 | 34 | 26 |
| | All types | 34 | 72 | .. | .. | .. | .. | .. |
| | Ward and semiprivate | 1 | 2 | 3.0 | 0.7 | 0.9 | 23 | 30 |
| | Semiprivate and private | 17 | 34 | 2.8 | 0.5 | 1.9 | 19 | 69 |
| | Ward, semiprivate and private | 39 | 57 | 2.6 | 0.9 | 1.2 | 33 | 44 |
| | Private only | 4 | 8 | 2.4 | 0.9 | 1.3 | 37 | 53 |
| | Semiprivate only | 2 | 2 | 2.2 | 0.9 | 1.4 | 37 | 59 |
| | Ward only | 4 | 9 | 2.2 | 0.4 | 1.4 | 18 | 63 |
| | All types | 67 | 112 | .. | .. | .. | .. | .. |
| | | | | | | | | |
| Nonsegregated ^b | Private only | 1 | 1 | 4.9 | .. | 4.9 | .. | 100 |
| | Ward and semiprivate | 6 | 6 | 2.8 | 0.4 | 2.1 | 16 | 76 |
| | Semiprivate and private | 7 | 11 | 2.0 | 0.4 | 1.3 | 22 | 63 |
| | Ward, semiprivate, and private | 15 | 22 | 1.5 | 0.5 | 0.6 | 32 | 43 |
| | Ward only | 6 | 20 | 1.1 | 0.4 | 0.3 | 31 | 29 |
| | All types | 35 | 60 | .. | .. | .. | .. | .. |
| | Semiprivate only | 2 | 5 | 3.1 | 0.5 | 2.2 | 17 | 71 |
| | Ward, semiprivate, and private | 16 | 23 | 2.8 | 0.9 | 1.7 | 31 | 61 |
| | Semiprivate and private | 7 | 11 | 2.6 | 0.8 | 1.7 | 30 | 64 |
| | Private only | 1 | 2 | 2.4 | 0.9 | 1.5 | 36 | 64 |
| Nonsegregated ^b | Ward only | 8 | 31 | 1.8 | 0.6 | 0.5 | 34 | 26 |
| | All types | 34 | 72 | .. | .. | .. | .. | .. |
| | Ward and semiprivate | 1 | 2 | 3.0 | 0.7 | 0.9 | 23 | 30 |
| | Semiprivate and private | 17 | 34 | 2.8 | 0.5 | 1.9 | 19 | 69 |
| | Ward, semiprivate and private | 39 | 57 | 2.6 | 0.9 | 1.2 | 33 | 44 |
| | Private only | 4 | 8 | 2.4 | 0.9 | 1.3 | 37 | 53 |
| | Semiprivate only | 2 | 2 | 2.2 | 0.9 | 1.4 | 37 | 59 |
| | Ward only | 4 | 9 | 2.2 | 0.4 | 1.4 | 18 | 63 |
| | All types | 67 | 112 | .. | .. | .. | .. | .. |
| | | | | | | | | |

^a Items are arranged in order of magnitude (hours per patient) under each service.

^b Services in which patients from several clinical services are cared for in one hospital unit, usually mixed medical and surgical patients, occasionally several different types.

ported, 14 of the 20 schools in church hospitals, 2 of the 3 in proprietary hospitals, and the 1 school connected with a government hospital.

Only 28 of the 55 general hospitals without schools of nursing returned questionnaires: 6 of the 15 under nonprofit association control; 4 of the 7 church hospitals, and the 1 general government hospital in the area without a school. The 1 general proprietary hospital with no school failed to report.

None of the special hospitals in the area operate schools of nursing. Of the 23 to which questionnaires were sent, 14 reported: 2 of the 7 nervous and mental hospitals, 4 of the 6 maternity hospitals, 3 of the 4 children's hospitals, and 5 of the 6 special hospitals of other types. Only 3 of the 8 unclassified hospitals to which questionnaires were sent returned them. None of the 8 operated schools of nursing.

Many general hospitals with schools of nursing receive affiliating students in certain services.⁸ One hospital in each of the different types of special hospitals, except maternity, also accepts such students.

Table 162 shows the amount of nursing service provided by hospitals with and without schools of nursing in medical, surgical, and nonsegregated services, in these three services combined, and in all services combined. Hospitals with schools gave more nursing care per patient per day in the surgical services and less in the medical and nonsegregated services than did the hospitals without schools. Comparison of these three services combined shows only a slight difference in the amount of nursing care provided by the two groups of hospitals (2.1 hours as compared with 2.0). For all services combined, however, the difference is greater; the hospitals with schools of nursing provided about a half hour more of nursing care per patient per day than did the hospitals without schools. This greater difference is due to the greater concentration of students in such services as obstetrics and pediatrics. The high percentage contribution of students, particularly in pediatrics, is revealed by other tables.

One category of hospitals not shown in the table received affiliating students from schools in other hospitals. In this category, graduates gave 8 percent of the nursing care, and affiliating students 92 percent; there were no nonprofessional workers. Hospitals in this category showed the highest number of hours of care per patient (2.74). Al-

⁸ An affiliating student is one who is assigned for special instruction and experience in one or more clinical services to a hospital other than the one with which her school is connected.

though the practice of allowing students to contribute so high a percentage of care cannot be condoned, affiliating students from other schools can be a valuable source of service, and under properly administered affiliations this service can be an educational advantage to them. This point should be borne in mind in considering the desirability of decreasing the number of schools, a recommendation made later in this chapter. Some hospitals now operating schools might, instead, receive affiliating students from other schools.

The percentage of hospitals with schools which returned the questionnaires is much higher than the percentage of those without schools; as a result, the sample of "hospitals without schools" is small.

The percentage contribution of the three types of personnel in Table 163 shows that the presence of students cuts down the percentage contribution of both types of paid personnel—graduate nurses and nonprofessional workers. For all clinical services combined the contribution of students reduced the contribution of nonprofessional workers from 49 percent to 15 percent. Again it is apparent that students perform many activities which in hospitals without schools of nursing are carried by nonprofessional personnel. The educational usefulness of this practice is questionable. The presence of students also reduces the contribution of graduate nurses from 51 percent to 23 percent. The implications in terms of the value of a school to a hospital are apparent.

COSTS OF NURSE EDUCATION Consideration should be given to the cost of operating the school and the obligation for meeting these educational costs. If student service (in terms of value of replaced graduate-nurse and nonprofessional service) and student payments of tuition exceed the cost of operating the school, then students are more than supporting the cost of their own education, a condition that exists in no reputable educational system, private or public. If the students' contributions in cash (tuition) and service (value of replaced services) are less than the cost of operating the school, the hospital is assuming costs of education as well as costs of service to patients. In such a situation the costs of hospital services paid by patients or by taxpayers also include the partial costs of nurse education, which is a hidden cost. The questions "Who pays for nurse education?" and "Who should pay for the preparation of nurses, who are valuable community workers?" deserve immediate and thorough investigation.

The decrease in admissions to schools of nursing since the close

TABLE 163. AVERAGE AMOUNT OF CARE PER PATIENT IN TWENTY-FOUR HOURS IN THREE SERVICES AND IN ALL SERVICES COMBINED IN HOSPITALS WITH SCHOOLS OF NURSING AND WITHOUT SCHOOLS OF NURSING IN CHICAGO AND COOK COUNTY, JULY, 1946

| TYPE OF CLINICAL SERVICE | NUMBER OF HOSPITALS | AVERAGE CENSUS | TOTAL | AVERAGE HOURS OF CARE | | | PERCENTAGE OF TOTAL CARE | | |
|---|------------------------|-------------------|-------|-----------------------|---------|----------------------|--------------------------|---------|----------------------|
| | | | | Graduate | Student | Nonpro- fessional | Graduate | Student | Nonpro- fessional |
| Medical | 20 | 2,913 | 1.4 | 0.4 | 0.7 | 0.4 | 30 | 41 | 29 |
| With schools | 16 | 2,516 | 1.4 | 0.4 | 0.7 | 0.3 | 27 | 50 | 23 |
| Without schools | 4 | 397 | 1.7 | 0.8 | ... | 0.1 | 43 | ... | 57 |
| Surgical | 19 | 2,655 | 2.1 | 0.7 | 1.0 | 0.5 | 31 | 46 | 23 |
| With schools | 16 | 2,239 | 2.2 | 0.6 | 1.1 | 0.5 | 29 | 51 | 21 |
| Without schools | 3 | 416 | 1.2 | 0.8 | ... | 0.5 | 61 | ... | 39 |
| Nonsegregated | 34 | 3,399 | 2.6 | 0.7 | 1.4 | 0.5 | 28 | 53 | 19 |
| With schools | 23 | 2,718 | 2.6 | 0.5 | 1.7 | 0.4 | 19 | 67 | 14 |
| Without schools | 11 | 681 | 2.7 | 1.7 | ... | 1.0 | 63 | ... | 37 |
| Medical, surgical and nonsegregated combined | 44 | 8,967 | 2.1 | 0.6 | 1.0 | 0.5 | 30 | 48 | 22 |
| With schools | 33 | 7,473 | 2.1 | 0.5 | 1.2 | 0.4 | 24 | 58 | 18 |
| Without schools | 11 | 1,494 | 2.0 | 1.2 | ... | 0.8 | 58 | ... | 42 |
| All services combined ^a | 61 | 15,994 | 2.1 | 0.6 | 1.1 | 0.4 | 28 | 52 | 20 |
| With schools ^b | 36 | 12,504 | 2.2 | 0.5 | 1.4 | 0.3 | 23 | 62 | 15 |
| Without schools | 25 | 3,490 | 1.5 | 0.7 | ... | 0.7 | 51 | ... | 49 |

^a All services combined includes the special services—pediatrics, tuberculosis, chronic disease—as well as obstetrics and psychiatry.

^b Including three hospitals which accepted affiliating students.

of the war will be reflected in the near future in the amount of service available from this group.

ADEQUACY OF NURSING SERVICE In all except a very few instances patients are receiving less care than the norm recommended prior to 1940 and now considered low. Private patients receive more care than ward patients, although the character of the hospitals has more effect upon the varying amounts of care provided than the type of accommodations. Factors other than need determine the distribution of the nursing service available.

In general, nursing care most closely approaches adequacy in those institutions in which students provide a high percentage of the total care. Special services, such as those for communicable diseases, pediatrics, and psychiatry, to which students are assigned to gain experience, are staffed more adequately than are those to which no students are assigned, such as tuberculosis and chronic diseases. During one week in July, 1946, students provided 120,591 hours of nursing care in the hospitals studied, or 52 percent of the total hours of care reported for that period by all the hospitals combined.

Plans for the number of students accepted by a hospital school of nursing appear to be made in relation to immediate needs for service rather than on the basis of a school's obligation to prepare the number of graduates needed by the community. An unnecessarily large number of schools is maintained. A smaller number of schools could prepare a larger number of nurses than now graduate annually whenever an increase is indicated.

The percentage of nursing care which nonprofessional personnel provide is low in all hospitals except in certain special institutions, such as those for the care of the chronically ill, and certain hospital units with ward accommodations only. The skills of professional nurses appear to be wasted on activities which do not require them.

THE NUMBER AND QUALIFICATIONS OF NURSES AND NONPROFESSIONAL NURSING PERSONNEL

Information in regard to the number of professional and nonprofessional nursing personnel and their qualifications was reported by 62 of the 97 hospitals. The number of vacancies for each type of position also was indicated. The data received illustrate once again the well-established fact that a shortage of nurses still exists. Approximately 23 percent of the positions authorized for staff nurses were vacant. While the shortage was not quite as serious in the adminis-

trative and supervisory staffs of the sixty-two reporting hospitals, slightly more than 10 percent of these vital positions were unfilled at the time the census was taken.

CENSUS OF PERSONNEL Table 164 shows that 10,050 personnel are classified by type of position, full time and part time. The number of vacant positions of each type is indicated also. The report forms enumerated separately 145 evening supervisors and 127 night supervisors. Since in most cases it was not clear whether or not these nurses already had been counted as part of the directive and supervisory staff, they were not included in Table 164.

TABLE 164. CENSUS OF PROFESSIONAL AND NONPROFESSIONAL NURSING PERSONNEL IN SIXTY-TWO CHICAGO-COOK COUNTY HOSPITALS, JULY, 1946

| CLASSIFICATION OF POSITIONS | NUMBER POSITIONS FILLED | | | NUMBER VACANCIES |
|---|-------------------------|-----------|-----------|------------------|
| | Total | Full-time | Part-Time | |
| Administrative, instructional and supervisory | 1,304 | 1,259 | 45 | 136 |
| Directors | 62 | 62 | ... | ... |
| Assistant directors | 88 | 87 | 1 | 5 |
| Instructors, clinical | 65 | 61 | 4 | 16 |
| Instructors, nonclinical | 96 | 82 | 14 | 11 |
| Supervisors, teaching | 188 | 176 | 12 | 22 |
| Supervisors, nonteaching | 254 | 247 | 7 | 13 |
| Head nurses | 551 | 544 | 7 | 69 |
| Nonsupervisory | 8,646 | 8,104 | 542 | 481 |
| General staff nurses | 1,635 | 1,369 | 266 | 481 |
| Student nurses | 5,312 | 5,312 | ... | ... |
| Nonprofessional workers | 1,699 | 1,423 | 276 | ... |

^a Evening and night supervisors omitted.

The 5,312 students reported by the sixty-two hospitals were of the following types: regular preclinical, 821; regular clinical, 3,561; affiliating, 844; and postgraduate, 86. The group of 1,699 workers classified as nonprofessional consisted of 180 practical nurses, 1,184 attendants, 235 orderlies, and 100 volunteer nurse aides. Part-time work only was reported for 11 of the practical nurses, 145 of the attendants, 20 of the orderlies, and all of the volunteer nurse aides.

ADEQUACY OF SUPERVISION A measure of the adequacy of nursing service in a hospital is the ratio of supervisory to nonsupervisory personnel. In the *Manual of the Essentials of Good Hospital Nursing Service*⁹ it is suggested that a general hospital which admits medical, surgical, obstetric, and pediatric patients and has a capacity of 166

⁹ Chicago, American Hospital Association and New York, National League of Nursing Education, 1942.

beds and a daily average of 133 patients should employ at least 7 head nurses, 73 bedside nurses, and 8.5 nonprofessional personnel. Under these conditions the ratio is 1 head nurse to 10.4 graduate staff nurses and 1.2 nonprofessional personnel. The services of student nurses were not included in this calculation. During the July, 1946, period reported by the sixty-two hospitals the ratio was 1 head nurse to 12.6 graduate staff and students and 3.1 nonprofessional personnel. The number of head nurses should be increased to reach the recommended ratio and probably further, to allow head nurses time for the instruction of students. This type of service was not taken into consideration in preparing the recommended ratio.

The ratio of supervisors plus head nurses to the average daily census of all patients was 1 to 19.9 in the reporting hospitals for all types of service, including private and obstetric. Teaching supervisors were excluded in making the calculation. The recommended ratio is 1 to 15 for medical and surgical wards, 1 to 10 for private accommodations, and 1 to 12 for obstetric wards. Comparison of the recommended ratios with those calculated for the sixty-two reporting hospitals in the Chicago-Cook County area shows that the ratio of supervisors and head nurses to patients falls considerably below the recommended minimum and, consequently, that the number of supervisors and head nurses is insufficient.

Earlier discussion indicated that the number of hours of nursing care provided by the reporting hospitals was well below recommended practice except on the psychiatric and communicable disease services and that there were a number of vacancies. As these vacancies are filled and more hours of nursing care are provided, the supervisory staff should be increased also, but in somewhat greater proportion, since at the time of the census the available amount of supervision was insufficient in relation to the bedside personnel reported, professional, student, and nonprofessional.

Perhaps it is futile to recommend an increase in the number of positions when the hospitals are unable to fill those already established. However, an adequate number of head nurses should make possible better working conditions, more smoothly functioning wards, more attention to staff needs, and consequently a more satisfied staff and fewer vacancies.

QUALIFICATIONS OF FULL-TIME PROFESSIONAL NURSES—Statistics in regard to the educational qualifications of the full-time professional nurses in the various position classifications are presented in

Table 165. All nurses in the supervisory groups had completed high school, with the exception of the director, a nonteaching supervisor, and one head nurse. Only about 36 of the 1,635 staff nurses (2.2 percent) reported less than a high school education.

Analysis of the information received in regard to education beyond high school told a different story. The percentages of those who reported some college work varied from 89.2 percent of the clinical instructors to only 14.6 percent of the staff nurses. The percentages in Table 165 show that a considerable percentage of the nurses with some college work in each of the first four classifications held college degrees, from 78.5 percent of the nonclinical instructors to 55.2 percent of the assistant directors. Much smaller percentages of the rest of the supervisory group reported degrees, 31.5 percent of the teaching supervisors with some college preparation, 23.9 percent of the nonteaching supervisors, and only 8.1 percent of the head nurses. Of the staff nurses with some college work, nearly 60 percent reported a year or less; only 9.2 percent had degrees.

By modern standards the general education of the groups listed as supervisors appears inadequate. These groups have large administrative and teaching responsibilities, and since they supervise a number of wards they also handle important personnel-management problems. They particularly should possess scientific understanding of the care needed and be able to interpret it to the staff and to the patients. Yet almost half reported no more than one year of college work. Many of the students under their supervision have educational backgrounds which are superior.

Although a considerable number of the nurses in administrative and supervisory positions reported preparation specifically directed toward the responsibilities they carry, all should achieve this type of preparation. The many who have had some preparation should obtain more. Non-teaching supervisors responsible for expert patient care and head nurses appeared least well prepared through special courses.

With increasing use of nonprofessional personnel, the head nurse job involves teaching and supervisory duties even when the clinical instructors are held largely responsible for student-nurse teaching. Yet approximately half of the head nurse group reported no special preparation for these management and interpretive responsibilities. Most of the remaining half reported only one year or less of special preparation for their positions.

TABLE 165. EDUCATION AND ADVANCED PREPARATION OF PROFESSIONAL NURSING PERSONNEL IN SIXTY-TWO HOSPITALS
IN CHICAGO AND COOK COUNTY, JULY, 1946

| PERSONNEL CLASSIFICATIONS | NUMBER OF PERSONS | HIGH SCHOOL COMPLETED | SOME COLLEGE WORK | PERCENTAGE DISTRIBUTION OF PERSONNEL BY AMOUNT OF EDUCATION YEARS OF COLLEGE | | | | Degree Received |
|---------------------------|-------------------|-----------------------|-------------------|--|---------|-----------------|------|-----------------|
| | | | | 1 Year or less | 2 Years | 3 Years or more | | |
| Directors | 62 | 98.3 ^a | 82.3 | 11.8 | 9.8 | 11.8 | 66.6 | |
| Assistant directors | 88 | 100.0 | 76.1 | 14.9 | 17.9 | 11.9 | 55.2 | |
| Instructors, clinical | 65 | 100.0 | 89.2 | 13.8 | 15.5 | 13.8 | 56.9 | |
| Instructors, nonclinical | 96 | 100.0 | 82.3 | 6.3 | 7.6 | 7.6 | 78.5 | |
| Supervisors, teaching | 188 | 100.0 | 67.5 | 47.2 | 12.6 | 8.7 | 31.5 | |
| Supervisors, nonteaching | 254 | 99.6 ^b | 42.9 | 44.0 | 19.3 | 12.8 | 23.9 | |
| Head nurses | 551 | 99.6 ^b | 46.8 | 57.0 | 30.6 | 4.3 | 8.1 | |
| Staff nurses | 1,635 | 97.8 ^c | 14.6 | 59.7 | 25.1 | 5.5 | 9.2 | |

^a One person only (1.7 percent) had not completed high school.

^b Two persons in each classification (0.4 percent) had not completed high school.

^c Thirty-six staff nurses (2.2 percent) had not completed high school.

QUALIFICATIONS OF FULL-TIME NONPROFESSIONAL PERSONNEL

A high school education was reported for 47 percent of the 1,423 nonprofessional personnel in the sixty-two hospitals, 47 percent of the 169 practical nurses, 46 percent of the 1,039 attendants, and 53 percent of the 215 orderlies. Less than high school was reported for 23 percent of the practical nurses, 35 percent of the attendants, and 47 percent of the orderlies. No statement was made in regard to 30 percent of the practical nurses and 19 percent of the attendants.

While a six-month training course was reported for only 12 percent of the group as a whole, 67 percent had received on-the-job training. Only 21 percent of the practical nurses, 10 percent of the attendants, and about 12 percent of the orderlies had taken a six-month course. On the other hand, 63 percent of the practical nurses and attendants and 89 percent of the orderlies had been given training on the job. No information was given about 16 percent of the practical nurses and 26 percent of the attendants.

Although the quality of the on-the-job training received by the full-time nonprofessional personnel could not be determined, the fact that it was reported for so large a number (956) indicates an awareness on the part of administrators of the need for orientation to a new position and concurrent instruction of personnel. Hospitals, along with industry, are beginning to develop on-the-job training to bridge the gap between the employee's previous training and experience and the requirements of the work to which he is assigned.

PERSONNEL PRACTICES

Not all practices related to sound personnel policies could be studied. Information was difficult to procure and even more difficult to classify. The discussion in the earlier part of this chapter in regard to the ratios of personnel to patients and of one type of personnel to another relates also to personnel practices, since it gives some indication of the work load in the reporting hospitals and the amount of supervision which professional nurses and nonprofessional nursing personnel receive. This section describes certain specific personnel practices: salaries, provision for maintenance, average hours of work, assignment of working hours, and health programs, including vacations and sick leave.

SALARIES Information about salaries was difficult to obtain. While 63 hospitals (including 33 with schools of nursing) returned the schedule on personnel practices, by no means all gave informa-

tion about salaries and maintenance practices for all classifications of personnel. Table 166 shows the percentages of hospitals reporting annual cash salaries for the various personnel classifications, the average minimum and maximum salaries reported, and the percentage of hospitals reporting specified maintenance practices.

From the information furnished it was impossible to prepare tabulations which would distinguish between salaries with maintenance provided and salaries out of which nurses paid maintenance. The statistics on salaries and maintenance in Table 166 must, therefore, be considered separately.

Comparison with teachers' salaries.—One method of measuring the adequacy of the salaries paid to personnel in a particular profession is to compare their salaries with those received by members of other professions who carry equivalent responsibilities. These comparisons were made between the lowest and the highest salaries reported for hospital nurses in the specified personnel classifications and the minimum and maximum salaries paid to Chicago public school teachers in the calendar year 1946.¹⁰

Salaries of directors of nursing services and nursing schools should compare favorably with those of high school principals, since the degree of responsibility for administration is comparable. Even though many of the nursing directors in the Chicago hospitals are not correspondingly qualified, their positions warrant such qualifications. The lowest salary reported for a director of nursing service was \$1,800, with maintenance also provided, and the highest, \$6,000 without maintenance. The average maximum cash salary reported was \$3,188. Some of the salaries from which this average was computed included the cost of maintenance; others were in addition to full or partial maintenance. Principals of elementary schools in Chicago received a minimum of \$4,350 and a maximum of \$5,950 in 1946. For high school principals, the minimum and maximum salaries received were \$5,700 and \$6,100. The \$3,188 average maximum salary reported for directors of nursing schools compares unfavorably with the minimum \$5,700 paid high school teachers whether or not the directors received partial or full maintenance in addition. The maximum reported for directors compares favorably with the lowest salary received by elementary school principals only in those cases in which full maintenance was provided in addition to salary.

¹⁰ National Education Association (unpublished data).

TABLE 166. AVERAGE ANNUAL CASH SALARIES AND MAINTENANCE PRACTICES FOR PROFESSIONAL NURSES AND NON-PROFESSIONAL PERSONNEL IN SPECIFIED PERCENTAGES OF SIXTY-THREE HOSPITALS REPORTING PERSONNEL PRACTICES

| PERSONNEL CLASSIFICATIONS | Percentage Hos- pitals Reporting | ANNUAL AVERAGE CASH SALARY | | MAINTENANCE PRACTICES PERCENTAGE HOSPITALS REPORTING | | | |
|------------------------------|-------------------------------------|----------------------------|---------|---|---------|------|-----------|
| | | Minimum | Maximum | Full | Partial | None | No Report |
| Professional | | | | | | | |
| Directors | 56 | \$2,864 | \$3,188 | 59 | 19 | 10 | 12 |
| Assistant directors | 52 | 2,374 | 2,732 | 29 | 19 | 8 | 44 |
| Instructors | | | | | | | |
| Nonclinical ^a | 78 ^b | 1,869 | 2,665 | 35 | 43 | 10 | 12 |
| Clinical ^a | 85 ^b | 2,173 | 2,419 | 33 | 45 | 12 | 10 |
| Supervisors | 71 | 2,051 | 2,311 | 21 | 38 | 14 | 27 |
| Head nurses | 70 | 1,891 | 2,079 | 17 | 43 | 14 | 25 |
| Staff nurses | 90 | 1,754 | 1,938 | 21 | 54 | 17 | 8 |
| Nonprofessional | | | | | | | |
| Practical nurses | 40 | 1,295 | 1,459 | 10 | 30 | 5 | 54 |
| Attendants | 70 | 1,177 | 1,386 | 8 | 44 | 17 | 30 |
| Orderlies | 67 | 1,417 | 1,608 | 13 | 41 | 10 | 36 |

^a Only forty hospitals returned any personnel information about instructors.

^b Information based on forty hospitals.

Supervisors in hospitals and instructors in schools of nursing carry responsibilities for patient care and for instruction beyond the high school level. It seems appropriate, therefore, to compare their salaries with those of high school teachers. The maximum cash salary reported for these groups was the \$2,665 average paid to nonclinical instructors, with either full or partial maintenance provided by less than half the reporting hospitals. While this maximum is higher than the \$2,350 minimum paid high school teachers in 1946, it falls far short of their \$3,950 maximum.

The average minimum and maximum salaries reported for staff nurses were \$1,754 and \$1,938, with full maintenance provided in addition by only one fourth of the hospitals. Elementary school teachers received a minimum of \$1,850 in 1946 and a maximum of \$2,850. Although the staff nurses' maximum without maintenance compares favorably with the elementary teachers' minimum, it is much lower than their maximum. The average minimum salary without maintenance reported for the staff nurses is nearly one hundred dollars less than the elementary school teachers' minimum.

Salaries of nonprofessional personnel.—The average minimum salaries reported for nonprofessional personnel appear low in comparison with the cost of living, particularly since only a few hospitals reported full maintenance in addition to cash salary. Some institutions reported extremely low salaries, \$840 with full maintenance for a practical nurse, \$720 for attendants, with no maintenance, and \$800 for orderlies with full maintenance.

Salary increases.—A large number of hospitals stated that three factors, length of service, additional special preparation, and quality of service, were considered in granting increases in salary, but no evidence was given that definite policies had been established. Approximately one ninth of the hospitals stated that they had no policy.

Cash compensation for overtime.—Graduate staff nurses receive monetary compensation for overtime somewhat less frequently than do the nonprofessional workers, but the nurses are given compensatory time off almost twice as often. Thirty-three of the 63 hospitals reported time off for nurses for this purpose, while only 19 hospitals reported the practice for nonprofessional personnel. On the other hand, only 14 of the 63 hospitals reported monetary payments to graduate staff nurses as compared with 23 which stated that nonprofessional personnel were paid in cash for overtime. The two government general hospitals and the single children's hospital re-

porting on this item gave both groups compensatory time off only.

Additional salary for evening and night duty was reported for assistant directors in 4 hospitals, for supervisors in 11 hospitals, for head nurses in 12 hospitals, and for staff nurses in 40 hospitals. Only 6 hospitals reported additional pay for evening and night service for practical nurses, but it is possible that few hospitals employ practical nurses on the evening and night shifts. Only 2 hospitals reported extra pay for orderlies on the night shift.

AVERAGE HOURS OF WORK PER DAY AND WEEK Sixty-three hospitals reported an average work week of 46.8 hours for graduate nurses, or 7.9 hours daily for approximately 6 days a week. The shortest working hours, 42 per week and 7 per day, were reported by 2 nervous and mental hospitals. Five non-government hospitals including two general proprietary hospitals, reported the longest hours, 8 hours per day, or a total of 48 hours. Average working weeks of 45.3 hours were reported by 4 maternity hospitals and of 44.8 hours by 5 other special hospitals, with an average of 7.9 hours per day for each group. Among the general hospitals, 2 governmental institutions reported the shortest work week, 46 hours, or 7.8 per day. The 20 general hospitals under church control and the 25 under nonprofit associations reported averages of 47.2 and 47.5 hours, respectively, or an average of 7.9 hours per day in each group.

There was more variation in the hours reported for students. Among the general hospitals the average work week, for the preclinical period, was 13.3 hours; with an average of 2.4 hours daily. The two proprietary hospitals reported the lowest number of hours, 10 per week and 2 per day, and the 20 church hospitals the highest, 15 weekly and 2.5 per day. In all the general hospitals the students' hours of work steadily increased from the preclinical period through the third year. The average for the first year was 33.2 hours weekly and 5.5 hours daily. For the second half of the third year the working periods averaged 45.3 hours per week and 7.5 hours per day.

In considering the number of hours of work reported for students, it must be remembered that students are learners who have many hours of classroom work in addition to these weekly hours of nursing practice and must have time for study. The weekly hour schedules in the reporting Chicago hospitals compare very unfavorably with those of students in other types of professional schools.

The hours of work for nonprofessional personnel averaged 47.2 per week and 7.9 per day, with a range in all reporting hospitals of

only 3 hours weekly, from 45 to 48. This group worked either the same number of hours as the graduate nurses or an hour or two more in almost all reporting hospitals except two under proprietary control. In the latter the nonprofessional personnel worked only 45 hours per week, while the graduate nurses worked 48 hours.

Split shifts.—This term is used to indicate the division of daily hours of work into two periods with a free interval between. Thirty-three of the 63 hospitals reported that they never assigned graduate nurses on a split shift, nearly half the general hospitals and three fourths of the special group. Twenty-five general hospitals and 3 special hospitals reported occasional use of this device with nurses, and 2 general hospitals stated that it was used frequently. The split shift was never used in assigning work hours to nonprofessional personnel by 27 general hospitals and 9 special hospitals, according to their reports. Occasional use was reported by 18 general hospitals and 1 special hospital, and frequent use by 4 general hospitals and 2 in the special group.

HEALTH PROGRAMS, INCLUDING VACATIONS AND SICK LEAVE
Hospitals reported practices in regard to pre-employment health examination, plans for hospitalization, vacations, and sick leave. Of the 63 hospitals reporting on health services, only 22, or one third, required pre-employment medical examinations. In almost every instance this requirement included chest X-rays, a serological test, urinalysis, and a blood count. With few exceptions, the hospital requirements for pre-employment health examinations were identical for professional and nonprofessional personnel.

Of the 61 hospitals reporting on hospitalization, 37, or 60 percent, reported Blue Cross plans or other insurance for both professional and nonprofessional personnel. In 90 percent of these hospitals the nurse or nonprofessional worker paid the insurance premium. Nineteen of the 24 hospitals which reported no participation in Blue Cross or other insurance plans provided hospitalization without charge to both professional and nonprofessional personnel. The average hospitalization allowance reported by one third of these hospitals was 23 days for professional personnel and from 14 to 21 days for the nonprofessional group. One hospital reported 60 days of hospitalization without charge, and several reported "as long as necessary."

Vacations.—The number of hospitals reporting vacation practices for the specified groups of professional personnel varied as follows: directors, 49; assistant directors and clinical instructors, 37;

nonclinical instructors, 36; supervisors, 50; head nurses, 48; and staff nurses, 57. Vacation practices reported for professional personnel, staff nurses excepted, were much more liberal than those for nonprofessional personnel. From half to two thirds of the hospitals indicated vacations of more than 14 days for all professional groups except the staff nurses. Only one third met the minimum standard of 14 to 21 days of vacation to staff nurses recommended by a joint committee of the Illinois State Nurses' Association and the Illinois Hospital Association.¹¹

Vacations of 8 to 14 days were reported for practical nurses by 78 percent of 27 reporting hospitals, for attendants by 84 percent of 45 hospitals and for orderlies by 87 percent of 39 hospitals. Only 14 percent of the hospitals reporting vacation practices for practical nurses and 8 percent of those reporting on attendants and orderlies stated that these nonprofessional groups received more than 14 days of vacation. Very few hospitals indicated vacations of 7 days or less for either professional or nonprofessional personnel, although one hospital stated that it granted no vacations to orderlies.

Sick leave.—Thirty-nine hospitals reported sick leave practices for directors, 33 for assistant directors, 32 for instructors and orderlies, 20 for supervisors, 37 for head nurses, 42 for staff nurses, 18 for practical nurses, and 35 for attendants. From 78 to 84 percent of the hospitals reported 8 to 14 days of sick leave for all professional groups, while 67 to 78 percent indicated this practice for the nonprofessional groups. The majority, therefore, appear to be meeting the minimum standards recommended by the joint committee of the Illinois State Nurses' Association and the Illinois Hospital Association.¹² Ten hospitals, however, reported that they gave no sick leave. The growing acceptance in the world at large of the importance of a sense of financial security in aiding recovery from illness makes it hard to believe that 10 hospitals in the Chicago-Cook County area should thus lag behind.

Permission to accumulate sick leave was reported by 19 to 40 percent of the hospitals for the various types of personnel. From 19 to 26 percent indicated this practice for instructors, assistant directors, head nurses, orderlies, attendants, and general staff nurses, and from 31 to 40 percent for directors, practical nurses, and supervisors.

¹¹ Nursing Information Bureau, *Facts about Nursing, 1946*, New York, American Nurses' Association, 1946, p. 81, Table 2.

¹² *Ibid.*

ACTIVITIES OF NURSES AND NONPROFESSIONAL NURSING PERSONNEL

Ninety-seven hospitals received forms on which they were asked to check the activities of professional nurses and nonprofessional nursing personnel in the medical, surgical, nonsegregated, obstetric, pediatric, and psychiatric services. One hundred and thirty-three activities were listed, classified under the following main headings: Caring for patients, clerical work, diets and nourishment, errands, house-keeping, and miscellaneous. The hospitals were requested to have the nursing supervisor on each service fill out a form, checking in the appropriate columns the activities performed daily, weekly, and monthly by the professional and nonprofessional nursing personnel assigned to her service.

Forms suitable for tabulation were returned by 51 general hospitals, but some of these hospitals provided only partial information. The number of hospitals which checked activities on the services specified was as follows: medical, 13; surgical, 12; nonsegregated, 39; obstetric, 26; pediatric, 14; and psychiatric, 5.

Space does not permit presentation of detailed tabulations showing the number of hospital services reporting performance of the specified activities daily, weekly, or monthly by graduate nurses, student nurses, and nonprofessional workers.¹³ The tabulations showed, however, that all the 133 activities were performed by all types of personnel, with few exceptions. Pertinent facts selected from the detailed tabulations are discussed in the succeeding paragraphs.

The performance of almost all activities by all three types of personnel seems to indicate that current availability of personnel determined the type assigned to an activity to a greater extent than did a plan for assigning personnel to the activities best suited to their skills.

The high percentage of checks indicating that graduate nurses performed such activities as filling drug requisitions, dispensing drugs from drug room, or preparing parenteral solutions showed that activities which should be performed in a central service unit are decentralized in many reporting hospitals. Tabulation of the replies to the item "run errands to drug room" indicated that students performed this activity in 32 percent of the reporting services, and

¹³ Comparisons of frequency of performance could not be made, because the hospitals were asked to indicate merely the performance of an activity, daily, weekly, or monthly, not the number of performances.

graduate nurses in 38 percent. The tabulation also showed that "graduate nurse" was checked in 25 percent of the replies to the item "take specimens to the laboratory," and "student" in 34 percent. These facts indicated not only that graduates and students performed activities easily assignable to nonprofessional workers but also that the central services did not operate a central messenger service. Activities which require leaving the hospital unit were performed too frequently by professional personnel.

A tabulation was prepared of the number of times each activity was checked for one or more of the three types of personnel, and percentages were computed. The findings in regard to certain activities were then classified under the following headings: (1) activities never ascribed to nonprofessional workers, (2) activities for which the checks for nonprofessional workers amounted to less than 5 percent of the total number of checks for that activity, and (3) activities for which the checks for nonprofessional workers exceeded 50 percent of the total number of checks for that activity. The number of hospital services in which any one activity was checked varied, but the items which appear in the three lists given below were checked for a large proportion of these services.

Activities Never Ascribed to Nonprofessional Workers

| | |
|-------------------------------------|------------------------------|
| Administer subcutaneous medication | Assist doctor with dressings |
| Administer intramuscular medication | Catheterize |
| | Take blood pressure |

Activities Ascribed to Nonprofessional Workers in Less than 5 Percent of the Totals Checked for Each Activity

| | |
|--|---------------------------------------|
| Accompany doctor to patient | Chart notes, medications, et cetera |
| Administer rectal medications | Set up diagnostic and treatment trays |
| Administer blood or plasma | Administer oral medications |
| Assist doctors with intravenous injections | Administer intravenous medications |
| Assist doctors with physical examination | Apply hot sterile dressings |
| Give eye irrigation | Assist doctors with lumbar puncture |
| Give perineal irrigation | |
| Give vaginal douche | |

| | |
|----------------------------------|-------------------------|
| Assist doctors with taking blood | Give throat irrigation |
| Take care of mothers' breasts | Chart |
| Give ear irrigation | Prepare infant feedings |
| Give isolation care | |

Activities Ascribed to Nonprofessional Workers by More than 50 Percent of the Total Checks for Each Activity

| | |
|--|--|
| Take care of patients' flowers | Make ether bed |
| Collect and wash water pitchers | Set up tray |
| Wash nourishment dishes | Get flowers from front office |
| Get special nourishment or supplies from kitchen | Get supplies from supply room |
| Get ice | Clean bathrooms |
| Clean bed pans and urinals | Clean charting and nurses' desks |
| Clean linen closet | Clean patients' unit |
| Clean refrigerators | Clean rooms and ward units after discharge |
| Dust | Put clean linen on shelves |
| Sort and bag soiled linen | Relieve personnel at switch-board |
| Relieve in admitting or business office | |

Duties obviously of a housekeeping nature were reported for nonprofessional workers by a high percentage of hospital services. However, 16 percent of the reporting services indicated that students cleaned bathrooms, linen closets, and refrigerators at least daily, 8 percent showed that graduate nurses cleaned bathrooms, and 13 percent that they cleaned refrigerators. Graduate nurses folded and wrapped dressings in 26 percent of the services replying, while students performed this activity daily in 30 percent. Students sorted soiled linen and placed it in bags in 23 percent of the reporting services, and in 17 percent, graduates performed this activity daily.

Distributing mail to patients regularly, setting up new charts, and writing names on temperature charts are activities reported frequently for graduate nurses. These and other clerical activities might be given to a clerical worker.

In this study sufficient evidence exists to lead to the suspicion that in situations where there are students so few activities are performed by nonprofessional workers that further examination of student experience is warranted. Obviously, students must perform necessary activities often enough to learn them sufficiently well to remember

how they are performed, but the reports from the hospital services indicate that such activities continue to be performed by students after the learning period is past.

Comparisons of graduate and student activities show few differences, except that students do more cleaning and errand-running. Analysis of the checking of such activities as taking blood pressures, assisting with lumbar punctures, and assisting with physical examinations indicated that graduate nurses performed these activities in a much higher percentage of the services returning the forms than did students. These findings point to the need for examination of the content of the advanced phases of student experience.

Few of the activities performed in the different clinical services appeared to be distinctive of any one service and the proportion of the three types of personnel performing activities varied only slightly from service to service. No comparisons of the activities of the three types of personnel were made between clinical services in hospitals of different types and sizes.

The activities checked in almost equal proportion for graduate nurses, student nurses, and nonprofessional workers are listed in Table 167 together with the percentages of total checks of each activity computed for each type of personnel. The fact that performance by nonprofessional workers was checked for approximately one third of each of these activities indicates waste of nursing skills in some instances by hospital services reporting that graduate nurses and student nurses performed such activities.

NEED FOR MORE UTILIZATION OF NONPROFESSIONAL PERSONNEL

A great need for nonprofessional workers exists not only in hospitals but also in convalescent and boarding homes and for persons living in hotels and rooming houses. The validity of this statement is attested by the following quotation from a letter received by the survey staff from the director of the Central Service for the Chronically Ill of the Institute of Medicine of Chicago.

. . . the lack of well qualified nursing service is one of the serious problems related to the care of chronically ill patients. There are in Chicago and Cook County approximately 50,000 invalids. We estimate that of this number about 35,000 are cared for by the families in their own homes; 8,000 to 10,000 are in institutional homes or small proprietary nursing and boarding houses, hotels, rooming houses and other places not intended for the care of the sick. Many of the so-called nursing homes operate with no registered nurses.

TABLE 167. ACTIVITIES CHECKED FOR WHICH THE DIFFERENCE IN DISTRIBUTION AMONG ALL TYPES OF PERSONNEL PERFORMING THESE ACTIVITIES IN REPORTING HOSPITALS WAS NOT MORE THAN 10 PERCENT, JULY, 1946

| TYPE OF ACTIVITY | PERCENT OF TOTAL CHECKS | | |
|---|-------------------------|----------------------|-------------------------------|
| | <i>Graduate Nurse</i> | <i>Student Nurse</i> | <i>Nonprofessional Worker</i> |
| Caring for patient | | | |
| Accompany patient to other departments | 36 | 36 | 28 |
| Accompany patient to office on discharge | 33 | 36 | 31 |
| Answer call lights | 36 | 32 | 32 |
| Assist patient in and out of bed | 36 | 35 | 29 |
| Fill ice caps and collars | 35 | 36 | 29 |
| Get bath water, etc., for patient giving own bath | 31 | 36 | 33 |
| Give and receive bed pans | 38 | 34 | 28 |
| Give back rubs | 37 | 36 | 27 |
| List and care for patients' clothes | 38 | 31 | 31 |
| Wash patient's face and hands | 34 | 35 | 31 |
| Take patient to bathroom | 33 | 36 | 31 |
| Diets and nourishments | | | |
| Carry trays to patients | 29 | 33 | 38 |
| Prepare nourishment | 29 | 39 | 32 |
| Wash feeding bottles and nipples | 32 | 35 | 33 |
| Errands | | | |
| Get drugs from drug room | 38 | 32 | 30 |
| Take requisitions to other departments | 30 | 30 | 40 |
| Housekeeping | | | |
| Distribute clean linen for bedmaking | 29 | 32 | 39 |
| Wash and care for rubber goods | 31 | 34 | 35 |

The lack of any facilities in or near Chicago for adequate training of practical nurses means that there are few competent practical nurses available. This leaves the care of large numbers of sick patients in the hands of completely untrained persons.

It is the rather general opinion of persons familiar with the care of the chronically ill that a large proportion of the personal care and routine nursing needed by chronic patients can be provided by competent practical nurses, provided they work under the supervision of well-qualified registered nurses. Competent practical nurses are not now available in any significant number in Chicago or Cook County. We believe, therefore, that one of the urgent needs in attempting to assure better care for chronic patients is the establishment of good training facilities for practical nurses.

SUMMARY AND CONCLUSIONS

In so far as daily average hours of care per patient is a reliable index of the adequacy of nursing care, the approximately sixteen thousand patients in the sixty-one hospitals studied in Chicago and Cook County did not receive adequate care on the average. Only an ex-

tremely small number of these patients in a small number of hospital services received care which approached or exceeded the recommended norm. A large number of patients received a dangerously low amount of care, and often a large proportion of the care provided was given by students. The amount of service rendered by graduate nurses was extremely low in all instances.

Filling the vacant professional nursing positions reported would increase the amount of care provided by less than 0.2 hours per patient. So small an increase would not be sufficient. Provision of the additional nursing personnel required to meet the amounts of care recommended (now conceded low) must be considered in budget making. Additional positions should be authorized for all levels of personnel, supervisory and staff, in order to improve the ratios of supervisory personnel to staff.

The reports studied indicated that hospitals under state and local control provided less care on the average for their patients than did the nonprofit association and church hospitals. Private patients received more care than semiprivate and public ward patients. The distribution of available care appeared to be based on factors other than the patients' needs.

On the average, patients received more care in hospitals with schools of nursing than in those without schools. A more nearly adequate number of hours of care was given patients on the special clinical services, such as communicable diseases and pediatrics, to which student nurses are assigned in order to gain specialized nursing experience.

The findings indicated that too high a percentage of the professional nurses in supervisory and administrative positions were not well qualified for their work by special education. A large number of the instructors and administrators in the schools of nursing had had no special preparation for their educational functions.

Preparation of nonprofessional workers was provided by on-the-job training, if at all. The training available was often unorganized. Practical nurses can be trained more effectively and economically in schools than by on-the-job preparation. Facilities for such training are extremely scarce in the Chicago-Cook County area.

The amount of supervision given staff nurses, student nurses, and nonprofessional workers is somewhat below the recommended norm.

The 46- to 48-hour week for graduate nurses prevails generally. The "split shift" still operates in too many instances. The hours-per-

week schedules of students are too high to permit sufficient time for study.

Salaries of nurses, administrative, supervisory, and staff, are low on the average in comparison with salaries of persons carrying similar ranges of responsibility in public schools. In many hospitals salaries are low by any standard. In some hospitals salaries of nonprofessional workers are extremely low. Promotion policies and salary scales in many hospitals do not appear to be clearly formulated. Salary scales should be reviewed at frequent intervals in relation to costs of living.

While health programs for nursing and related personnel appear fairly satisfactory in some institutions, they are inadequate in approximately two thirds of the sixty-one reporting hospitals. Practices in regard to sick leave, pre-employment examinations, and re-examinations are particularly in need of improvement.

The hours-per-week schedules for student nurses should be reduced as a part of good personnel practice for students. This recommendation also is justified on an educational basis.

It is doubtful whether forty-two schools of nursing are necessary in the Chicago-Cook County area to produce the number of graduate nurses required in this area and the other areas served educationally by schools of nursing in Chicago and Cook County. The present large number of schools appears uneconomical, because there is unnecessary duplication of faculties, laboratories, classrooms, and libraries. Instead of improving all the poor schools, probably a difficult task, consideration should be given in long-range planning to the development of a more compact and effective system.

In some clinical units reports indicated that affiliating students received the experience they needed and gave valuable services. Students appeared to spend too much time in repetitious, nonprofessional activities. The high percentage of total service given by students indicates that experiences are planned on other bases than their educational needs. To attract students and to keep the supply of graduate nurses from dropping below the already alarming level, schools of nursing must be improved.

At a time when nurse power is admittedly scarce, nurses are performing many activities which nonprofessional workers could carry competently. Increasing the amount of training of nonprofessional personnel would increase the number of activities from which professional nurses could be relieved without endangering the quality of patient care. Apparently nonprofessional personnel, both trained

and untrained, is even less available than professional personnel. Correcting this latter shortage through training and establishing attractive personnel practices would improve the utilization of nurses. Activities demanding skill of professional nurses must be done by "short-cut methods" when their load of nonprofessional activities is heavy. Patient care would be improved markedly by release of professional nurses for their proper functions.

How much of this improper utilization of skills is due to the existing character of administration by head nurses, supervisors, directors of nursing services, and hospital directors cannot be determined by this study. The responsibility for improved utilization will, however, rest upon this group, and expertness in this aspect of their supervisory and administrative functions should be developed among them.

The list of activities used in this study was not asserted to be comprehensive. The list was made for the purpose of determining whether or not there was effective utilization of available nurse power of all types. The analysis showed that utilization should be improved. Each hospital should make a comprehensive study of nursing and related activities, including finer detail and more items requiring highly technical skills. Attention should be given also to the condition of the patient for whom an activity is performed. Critically ill patients or patients needing finely differentiated observations for diagnosis, for example, may require the professional nurse for elementary nursing activities.

Such a study, along with determination of the standard of nursing service to be offered by each hospital, is basic to budget making and to selection and assignment of personnel.

The following categories are suggested for a study of nursing and related activities upon which policy determinations could be based, whether these policies provide only for improved utilization of personnel now employed, plan for patient care after filling vacancies in positions now budgeted, or aim at an improved standard for patient care by means of additions to personnel and budget:

- 1) Activities which are highly technical and require professional knowledge and skill.
- 2) Activities which constitute elementary nursing.
- 3) Activities, such as clerical and housekeeping duties, which require no nursing knowledge.
- 4) Activities which are centralized (for example, central supply

room), including activities required for delivery of services to hospital units where there are patients.

Classification of activities into these categories should be flexible to provide for requirements of patients according to their condition—physical, emotional, and sociological. The study should be directed also at the means of co-ordinating all pertinent activities into a functioning whole from the point of view of each patient—this co-ordination itself being a primary activity of the professional nurse in the patient situation.

In general, activities in the first category would be performed by professional nurses with careful supplementation by trained practical nurses. Many of the activities in the second category could be assigned to trained practical nurses working under the supervision of professional nurses. Activities in the third category would be assigned to appropriate clerical, housekeeping, and other types of nonprofessional personnel. Activities in the fourth category, because of their special nature and the repetitiousness with which they are performed, could be assigned in part to personnel trained on the job and given professional supervision and responsibility. Later, for economy in training, this type of personnel might be prepared also through specified courses for certain activities (for example, care of standard equipment and operation of sterilizers). Many activities, however, such as delivery of charts, requisitions, and supplies, would be specific for each hospital, and on-the-job training would be more effective.

The professional nurse in such an organization of activities will be required to have knowledge and skill in all. Since she must operate the therapeutic program prescribed by the physician in accordance with hospital policies, she must have understanding of principles, a high degree of interpretive skills, and ability to co-ordinate activities into a unified whole for each patient. Her responsibility increases with the number and the types of personnel whose activities she must integrate, whether she serves as staff nurse, head nurse, or nurse in charge of one of the central services. The trained practical nurse who has completed a year's program of preparation could perform many of the activities in the second category under professional supervision. If she is to be responsible for supervision and administration of one or more hospital services, the professional nurse should complete an advanced program of study in a university.

The hospital should plan, as to both budget and personnel, for

performance of all activities by paid personnel (with the possible exception of volunteers). When hospital services are used as clinical practice fields for students of professional or of vocational nursing, analysis by administrators of schools should indicate a selection of activities which must be practiced by students to prepare them for their respective roles as professional or as practical nurses.

Professional nurse students will need experience in all four categories of hospital nursing activities (as well as extra-hospital experiences), but only to the point of mastery. Activities in category one will require extensive and carefully designed practice. Mastery of activities in categories three and four will be achieved very quickly, and in category two with more practice than will be needed for the other two categories. During practice periods student nurses will release paid personnel, chiefly graduate nurses, and the school of nursing budget should be credited with these savings.

Practical nurse students will need selected experience in categories three and four, with the amount of experience in category two predominating.

Analysis of activities should lead to revision of nursing service policies and should guide budget making and planning for personnel requirements. The end result should be immediate improvement of patient care. The implications for education if applied in action should result in preparation of better nurses for still greater improvement of patient care in the near future.

RECOMMENDATIONS ¹⁴

It is recommended that:

1. The amount of nursing and related services for patients in the institutions studied shall be increased through employment of more graduate professional nurses and more nonprofessional workers.
2. The care of patients shall be safeguarded by use of graduate professional nurses for activities for which their skills are required.
3. The skills of graduate professional nurses now in scarce supply shall be utilized more economically by assigning to nonprofessional workers those activities for which professional skills are not required.
4. City-county-wide planning shall be inaugurated at once to determine the number of professional nurses and of nonprofessional

¹⁴ These recommendations are of necessity general, because of the great number and variety of institutions studied and because the study did not include direct observation of any institution.

workers, both trained and untrained, needed to meet community needs.

5. Recruitment of students in professional schools of nursing shall be planned in relation to predetermined needs for graduate nurses.

6. Schools for preparation of professional nurses shall be improved in quality to provide adequate preparation for nursing and a study shall be made with a view to decreasing the number of schools to avoid expensive duplication of facilities.

7. The Chicago Council on Community Nursing shall plan and promote such vocational schools of nursing as are needed to provide the needed number of trained practical nurses.

8. Qualifications of graduate nurses, particularly in administrative and supervisory positions, shall be improved by leaves of absence for study, by scholarships for advanced study, by in-service education, and by filling vacancies with well-qualified personnel, to the end that administrative and supervisory activities be conducted more efficiently.

9. Personnel practices in regard to tenure of office, promotions, and other factors shall be studied in an effort to eliminate the undesirable features which undoubtedly influence the inordinately large turnover in the staff.

10. Nursing salaries shall be increased so that they compare favorably with those paid in other sections of the country.

11. The Chicago Council on Community Nursing shall bring to the attention of the people of Chicago and Cook County the soundness of their investment in high quality nursing service.

12. The Chicago Council on Community Nursing shall continue to study nursing conditions, to formulate standards of nursing care, and to initiate action toward meeting standards of nursing service.

MEDICAL SOCIAL SERVICES

by *Dora Goldstine*

MEDICAL SOCIAL WORK in Chicago began in 1909. In that year the Maxwell Street Dispensary (under the auspices of the Jewish Charities of Chicago) made the first attempt to offer an individualized service to patients by adding a graduate nurse to its staff for follow-up services to patients in addition to certain nursing duties. "In the same year the Presbyterian Hospital employed a full-time nurse as a medical social worker 'to ease the dismissal from the hospital of patients no longer needing its care, yet not entirely convalescent, with no place to go and needing further advice and assistance.'"¹ In 1911 the Illinois Training School for Nurses, following the loan for one year of a worker from the United Charities, employed a "social service nurse," primarily to deal with the problem of the abandonment of babies by their unmarried mothers. In the same year social service departments were organized also at Children's Memorial Hospital and at St. Luke's Hospital, the latter employing a social worker from Boston who seems to have been the first fully trained worker in a hospital in Chicago.

In the thirty-seven years since Chicago hospitals first directed attention to the social problems of sick persons, 25 general and special hospitals and clinics, out of a total of 101 in the city and county, have organized social service departments, and, in addition, medical social workers have been employed in the medical service programs of the city and county welfare agencies, as consultants in private family agencies, and as consultants or executive directors of voluntary health organizations concerned with promotional and educational activities directed toward the control and prevention of specific diseases or disabilities.

The report on which this chapter is based is the first attempt to

¹ Information and quotations taken from an unpublished paper on "Functions of Medical Social Work," presented by Mrs. A. D. Kohn at a meeting sponsored by the Illinois District of the American Association of Medical Social Workers in September, 1938.

study medical social practice in the Chicago-Cook County area. The survey included study of the social service departments of 14 general and 2 special hospitals with outpatient departments and of 2 general and 3 special clinics.² The medical social units of the two public welfare agencies also were studied. Special information was obtained in regard to the need and desire for medical social service in 38 general hospitals, 11 special hospitals, and 6 clinics without medical social service departments.

The medical social services offered by the voluntary health organizations and by the private family service agencies were not studied. No attempt was made to include the state medical care and health agencies with medical social staffs in their Chicago offices, since these programs are not under city or county auspices, although they serve groups in the Chicago-Cook County area.

The purpose of the survey was to determine the nature and effectiveness of present medical social practice in the Chicago-Cook County area. In this evaluation, the survey staff was guided by principles formulated by the American Association of Medical Social Workers, particularly its "Statement of Standards"³ which the American College of Surgeons includes in its *Manual of Hospital Standardization*. These guides, however, are not complete or adequate, and the American Association of Medical Social Workers has never assumed responsibility, as a professional organization, for evaluating medical social service departments in hospitals and clinics in accordance with the standards it has developed.

Data were collected by personal interviews with the directors of social service departments and units, from individual personnel and worker assignment schedules, from time sheets kept by each worker for five consecutive days, and from the reading of selected case records.

ADMINISTRATION AND FINANCING OF SOCIAL SERVICE DEPARTMENTS

Generally, it is considered a sound principle of hospital administration that "the medical and social service departments be closely in-

² One maternity clinic was omitted because of the resignation of the one medical social worker employed and the employment of a new worker not familiar with the clinic during the time period of this study. Three institutions under the auspices of the Salvation Army also were omitted because they are atypical in their organization, financing, and method of rendering service, although they make a significant contribution to the care of sick persons in the community.

³ American Association of Medical Social Workers, *A Statement of Standards to Be Met by Medical Social Service Departments in Hospitals and Clinics*, Chicago, June, 1940.

tegrated in relationship and organization.”⁴ Such integration can be accomplished effectively only when the director of the social service department is fully responsible to the executive officer of the institution and the funds for financing the department are handled through the hospital treasury, regardless of their source. The director of the department should present an annual budget for salaries and other operating expenses to the executive officer and should administer the department in accordance with the approved budget and the general policies of the institution. Implied in this degree of administrative autonomy should be the responsibility for appointing qualified staff and for dismissing unsatisfactory employees.

In the light of these standards, lines of responsibility and authority were ascertained in the social service departments of the twenty-one institutions studied. Three of these departments consist of one worker each, and to these a consideration of administrative responsibilities is applicable only partially. The remainder of the departments vary in size from two to twenty workers and show corresponding variations in the complexity of their administrative relationships.

It was found that in all instances the social service department was an integral part of the institution, the director being responsible to the chief executive officer. In two instances, however, the director had some measure of responsibility to an outside committee. This finding was of particular interest in view of its marked difference from New York City, where in 1935 more than half the social service departments were responsible in some degree to outside auxiliaries or committees.⁵

In six departments the head is designated “director of clinic and social service,” and in all except one the department is responsible for both clinic administration and social service activities. In only one of six departments is the budget for social service activities separate from that for the total outpatient program.

In each of two clinics employing only one medical social worker the expenditures for social service are included in the total operating budget of the clinic.

The remaining 13 departments in hospitals and clinics are responsible only for medical social services to patients. Each is established as a unit of service co-ordinate with the other service divisions of the

⁴ *Ibid.*, p. 6.

⁵ The United Hospital Fund of New York, *Hospital Survey for New York*, New York, 1937, Vol. II, ch. viii.

institution, the director being responsible to the administrative officer. The budget in 8 is submitted annually by the director of social service and, when approved by the executive officer, is administered by her, with freedom to appoint and dismiss staff. Only 1 director is required to report appointments and dismissals.

In 3 departments, the expenditures for the social service department for salaries and other operating expenses are itemized in the total budget for the institution, but the department has no separate budget. In 2 other institutions, funds for the operation of the department are included in the total clinic budgets, although these departments serve both clinic and hospital patients and the directors secure approval for each expenditure as the need arises. For all practical purposes, therefore, it can be said that in 5 of 13 departments the directors have no budget for the department and are restricted accordingly in their program planning. It would be sounder practice to permit these departments to operate under formally approved budgets which would enable the director to consider her needs for the year as a whole and to plan for additions to the staff, salary increases, and other essentials to the department's growth.

USE OF AUXILIARY COMMITTEES In the initial development of medical social work in clinics and hospitals, lay committees (usually composed of members of a woman's board or auxiliary) played a large part, often initiating the service and in many instances administering the department and providing full financial support. As hospital administrators and boards accepted medical social work as essential in the care of sick persons and as it became integrated within the medical institution, the role of the auxiliary committees changed. Major emphasis was diverted to the provision of funds for certain specific needs of patients which were met neither by the hospital nor by outside agencies and to interpretation of the work of the department to boards of directors and to the community. These values of the lay committee to the social service department have been demonstrated adequately and are recognized by leaders in both the social service and the hospital fields.

Sixteen of the twenty-one departments reported one or more lay groups, variously designated as auxiliaries or social service committees. The chief function of these committees was to raise funds for special needs of patients or to supplement departmental expenses. In only one department is the auxiliary committee responsible for financing all departmental expenses, including salaries. Despite the

substantial contribution made by this committee, however, it has no administrative authority, and the department functions as an integral part of the hospital.

In one other instance, at Cook County Hospital, a social service committee, primarily advisory to the department, carries administrative responsibility in relation to the budget. At the request of the director of the School of Nursing, this committee presents the budget for the social service department to the board of directors of the school and often to the county commissioners. In this case the situation is unique in that the social service department is operated by the nursing school, an independent voluntary agency under contract with the county commissioners to provide certain professional services.

The majority of the directors of the social service departments considered the auxiliary committees of value chiefly to interpret the work of the department. The results of activities of this type are intangible, and their influence is cumulative and not measurable readily. The fact that the value of such work cannot be measured readily does not detract from the great contribution that lay groups can bring, not only in financial support but also in policy making, in testing the soundness of the program, and in interpreting its purposes and accomplishments to the community. The existing relationships between social service committees and departments require further evaluation by each group if their potentialities for productive joint effort on behalf of patients are to be realized fully.

PERSONNEL ENGAGED IN MEDICAL SOCIAL ACTIVITIES

Employment of a total of 124 medical social workers in hospitals and clinics was reported at the time of the survey, including 2 persons on leave of absence and 5 clinic aides. Information in regard to education, age, and type of position was received, however, from only 118.

EDUCATIONAL QUALIFICATIONS AND AGE Properly qualified personnel is the most important factor in adequate medical social service, as in any professional service. Because social work is a relatively new profession and medical social work one of its newer specialties, the public and even many hospital administrators do not yet appreciate fully that specialized training in this field is essential for competent work. This attitude is a serious obstacle to raising standards in medical social service departments. Professional education

for social work is a development largely of the past twenty-five years, and many persons currently employed either have not been able or have not been willing to avail themselves of the opportunity for such education. In considering the qualifications of medical social workers now employed in Chicago, this fact should be borne in mind, as well as the strong influence of nursing schools on the early development of medical social work. Although today there is general acceptance of the identification of medical social work with the profession of social work as a whole, this evolution has come about slowly, and there have been sharp differences of opinion as to the necessity for nurse's training. This point of view was natural, since a number of departments in Chicago and elsewhere were started by schools of nursing which assigned a nurse to "social service duties." If, however, the specialty of medical social work is to attain professional status, a first essential is a sound and uniform educational preparation based on general social work concepts.⁶

The analysis of the educational qualifications of the 118 reporting medical social workers, presented in Table 168, indicates that nearly four-fifths (92) have had professional education in social work. Half the total group (59) hold an M.A. degree or have completed the two-year course of graduate study in an accredited school of social work with the exception of the thesis requirement for the degree. Four of these were also registered nurses; 2 others have had graduate courses beyond the M.A. degree.

It is significant that of the 33 with less than the full 2 years of graduate education all except 1 are under 50 years of age, and only 9 are over 40. The fact that more than a third of the total employed group have only a partial educational preparation for medical social work, although they are in the age groups to which such education has been available, raises a question as to other factors affecting the securing of adequate preparation. Among those of chief importance are probably the low salaries paid in hospital social service departments, which limit the worker's ability to finance graduate study, and the lack of appreciation by hospital administrators of the qualifications needed for adequate performance.

Twenty-six, or more than a fourth of the total group, have had no

⁶ The American Association of Medical Social Workers approves as such preparation only those courses of study which require two years of graduate education (leading to the M.A. degree) in schools of social work accredited by the American Association of Schools of Social Work.

TABLE 168. EDUCATION OF MEDICAL SOCIAL WORKERS IN HOSPITALS AND CLINICS BY AGE

| TYPE OF EDUCATION | TOTAL | AGE GROUPS | | | | |
|--|-----------------|------------|-------|-------|-------------|-----------|
| | | 20-29 | 30-39 | 40-49 | 50 and Over | Not Given |
| With professional education in social work | .. | .. | .. | .. | .. | .. |
| A.M. degree or complete two-year program except thesis | 59 | 21 | 22 | 11 | 5 | .. |
| One year | 23 | 7 | 10 | 6 | .. | .. |
| Less than one year | 10 | 3 | 3 | 3 | 1 | .. |
| Total with professional education | 92 | 31 | 35 | 20 | 6 | .. |
| Without graduate education in social work | .. | .. | .. | .. | .. | .. |
| A.B. degree | 6 | 2 | 1 | 1 | 1 | 1 |
| College without degree | 17 | 2 | 3 | 4 | 6 | 2 |
| High school only | 3 | .. | 1 | 1 | 1 | .. |
| Total without graduate education | 26 ^a | 4 | 5 | 6 | 8 | 3 |
| All types | 118 | 35 | 40 | 26 | 14 | 3 |

^a Includes eleven persons who are registered nurses.

graduate educational preparation in social work, and of these, 20 persons have not completed college education. The fact that more than half the latter group are under 50 is serious in view of their probable continued employment in the field for several years to come and their ineligibility for graduate education.⁷ Again, there is significant indication of agency standards in the fact that 9 persons employed without educational qualifications in social work are under 40 and presumably could have availed themselves of the opportunity for professional education so far as the age factor is concerned.

JOB CLASSIFICATIONS OF MEDICAL SOCIAL WORKERS The type of position held by the 118 medical social workers in relation to both education and experience is shown in Table 169.⁸ The terms "director," "supervisor," and "case worker," as used in the table, relate to functions performed and do not correspond necessarily in all cases to the titles assigned to its personnel by a department. Persons supervising one or more workers and carrying responsibility for direct case-work services are listed as supervisors. In this classification is

⁷ The ages of two other persons lacking a college degree were not given.

⁸ Although personnel in 21 departments are included, only 18 persons are listed as directors. The director of 1 department failed to return the personnel questionnaire; and in the 2 clinics staffed by 1 worker each, these workers were classified as case workers rather than as directors, since their duties were on the operating rather than the administrative level.

TABLE 169. JOB CLASSIFICATIONS OF MEDICAL SOCIAL WORKERS IN HOSPITALS AND CLINICS, BY EDUCATION AND SOCIAL WORK EXPERIENCE

| EDUCATION AND EXPERIENCE | TOTAL | JOB CLASSIFICATION | | | | |
|--|-------|--------------------|--------------------|-------------|-------------|------|
| | | Director | Assistant Director | Super-visor | Case Worker | Aide |
| Full professional education | | | | | | |
| Experience | | | | | | |
| 1 year, less than 3 | 14 | .. | .. | 1 | 13 | .. |
| 3 years, less than 5 | 18 | 1 | .. | 1 | 16 | .. |
| 5 years, less than 10 | 11 | 1 | .. | 4 | 6 | .. |
| 10 years, less than 15 | 10 | 3 | .. | 2 | 5 | .. |
| More than 15 years | 6 | 5 | .. | .. | 1 | .. |
| Total | 59 | 10 | .. | 8 | 41 | .. |
| Professional education less than two years | | | | | | |
| Experience | | | | | | |
| 1 year, less than 3 | 6 | .. | .. | .. | 5 | 1 |
| 3 years, less than 5 | 4 | .. | .. | .. | 4 | .. |
| 5 years, less than 10 | 8 | .. | .. | .. | 8 | .. |
| 10 years, less than 15 | 8 | 2 | .. | 1 | 5 | .. |
| More than 15 years | 7 | 2 | 1 | .. | 4 | .. |
| Total | 33 | 4 | 1 | 1 | 26 | 1 |
| No professional education | | | | | | |
| Experience | | | | | | |
| 1 year, less than 3 | 9 | .. | .. | .. | 5 | 4 |
| 3 years, less than 5 | 3 | .. | .. | .. | 3 | .. |
| 5 years, less than 10 | 1 | .. | .. | .. | 1 | .. |
| 10 years, less than 15 | 5 | .. | .. | .. | 5 | .. |
| More than 15 years | 8 | 4 | .. | .. | 4 | .. |
| Total | 26 | 4 | .. | .. | 18 | 4 |
| Total | 118 | 18 | 1 | 9 | 85 | 5 |

included also the one psychiatric case consultant giving full time to consultation on medical social case work.

Although 8 of the 18 directors have had less than the required amount of professional education, all have had more than 10 years' experience and 6 have had more than 15 years' experience. The 9 supervisors are well qualified by professional education with one exception. Of the 5 case aides employed (a development of the war period), only 1 had had some professional education, and none had had more than 2 years' experience. Four were employed in the same department.

Only 9 departments are staffed entirely by workers with full or partial education in social work. On the other hand, 5 departments are staffed entirely by workers who have had no professional education whatsoever, and in 5 others, half or more of the staff are without training.

PARTICIPATION IN PROFESSIONAL ACTIVITIES Further factors of

importance in considering personnel qualifications are the worker's interest and participation in the professional activities of her field through membership in professional organizations, attendance at national or local conferences, committee work, the reading of professional literature, and the writing of professional articles. Of the 134 medical social workers in Chicago from whom information was obtained, 52 (or almost 40 percent) do not belong to any professional social work organization.⁹ Seventy-four workers (or about 55 percent) are members of the American Association of Medical Social Workers, 5 of whom belong also to the American Association of Psychiatric Social Workers, and 15 to the American Association of Social Workers. The remaining 8 belong only to the American Association of Social Workers.

For the year preceding the circulation of the questionnaire (April and May, 1946), attendance at national or regional conferences and at special institutes or conferences (in addition to the regular meetings of membership organizations) was reported as follows: national or regional conferences, 9; local conferences or institutes, 50; both types, 20. In evaluating the limited attendance at national conferences it should be recalled that the 1945 National Conference of Social Work was canceled because of the second World War.

The medical social workers in the Chicago-Cook County area appeared to participate in professional committee activities to a limited degree only.¹⁰ Only 11 persons were members of national committees, while 37 were active in 65 local committees. Ninety-three persons reported no committee responsibilities. It is possible, however, that many workers who might be interested in committee participation are not offered the opportunity for such activity. In Chicago, since many committees operate under the auspices of the Council of Social Agencies, they frequently are concerned with agency policy and must be composed of directors or supervisors. Often, too, the professional organizations desire as committee members only experienced persons who can represent the membership as a whole.

Another although less significant indication of professional interest is the number of persons subscribing to professional journals. Fifty-seven workers (or 42 percent) reported that they took 97 jour-

⁹ A separate listing of the medical social workers employed in the public welfare agencies was not obtained, and the group therefore includes the 134 workers, employed full and part time in all agencies studied, from whom schedules were received.

¹⁰ Membership on staff committees of the agency employing the worker was disregarded, since this activity was considered a part of the worker's regular responsibility.

nals, while 21 (or about 16 percent) noted that professional literature was available to them through department subscriptions. The remaining 56 (42 percent) listed no subscriptions. Ten workers had written articles for publication in social work journals, of which 25 were published.

NEED FOR ADDITIONAL PERSONNEL No attempt was made in the present study to formulate estimates of the number of workers needed in each department. However, of the 21 directors who commented on this point, all but 5 considered their staffs inadequate in size, and several of them noted also their need for workers who were fully qualified by education. In most instances, the estimates given appeared to be based on a thoughtful appraisal of actual need, and on plans for extending or developing service. In general, the survey staff had little basis for judging the validity of these estimates, although at Cook County Hospital, with the largest social service department in the city, the director's estimate of a needed increase in staff to almost twice its present size appears justified by the large numbers of patients served and their low economic status.

Four of the five departments which reported an adequate staff are in the group which cannot be considered to offer acceptable medical social services.¹¹ The fifth is a department which has had generous support and sound leadership over a long period. Its staff needs have been met adequately whenever an increase was requested.

SERVICES RENDERED BY SOCIAL SERVICE DEPARTMENTS

The activities in which the social service department may appropriately engage are the following:

1. Practice of medical social case work.
2. Development of the medical social program within the medical institution.
3. Participation in the development of social and health programs in the community.
4. Participation in the educational program for professional personnel.
5. Medical social research.¹²

The primary function is case work services to patients. Its teaching, research, and promotional activities grow out of an effective, well-established practice.

To determine the range of services given and the emphasis on par-

¹¹ See "Comments and Conclusions."

¹² American Association of Medical Social Workers, *Statement of Standards*, p. 4.

ticular aspects of service, information was obtained from directors regarding the time available for case work and the plan for adequate coverage of the services likely to present the greatest need, considered in relation to the assignment of such other responsibilities as admitting, clinic management, or follow-up.

ADMITTING Eight of the social service departments carried full responsibility for the admitting office, and in all but 3 the person in charge was a medical social worker. The amount of time given to admitting office duties by the 5 medical social workers ranged from three-fourths to one-fourth of the working week. Five of these 8 departments were responsible also for the full direction and management of the clinic. In 3 additional departments a partial responsibility was carried for the admission of certain groups of patients.

Fourteen departments were concerned in some way with the setting of special charges, including the 8 which covered the admitting office. The 3 departments partially responsible for admitting certain groups of patients also set certain types of special charges. An additional 3 departments were responsible either for setting certain kinds of charges, as for example, for prostheses, or for certifying to the director of the clinic the patients' ability to pay extra fees.

More than half the directors expressed themselves as strongly in favor of placing the admitting office under the social service department. Some of these believed that financial interviews with sick persons were handled with more understanding and flexibility by medical social workers; others considered the admitting interview an excellent opportunity for detecting social problems which might interfere later with medical care; still others stressed the desirability of an integrated social approach to the patient which could be initiated at the point of admission. Without denying the values of social admitting, it seems important to stress that a complete social case work service cannot be given by a department also responsible for covering the admitting office unless it is exceptionally well staffed as to the number and qualifications of its personnel. The emergent demands of the admitting office require full-time coverage, and to the degree that a social service department attempts this coverage, the time and energy of its workers will be deflected from case work service. Further thought should be given by both hospital administrators and the directors of social service departments to this question of assigning a medical social worker to the admitting office. As an administrative function, it well might be the responsibility of a medical

social worker, but it is highly questionable whether the case work functions of the social service department are furthered in any way by this assignment.

CLINIC MANAGEMENT As used in this survey, the term "clinic management" covers the duties customarily associated with the functioning of a clinic: scheduling appointments, assigning patients to physicians, arranging for diagnostic procedures and for consultation with other clinics, and similar procedures. The assignment of workers to review selected diagnoses in certain clinics for the purpose of finding patients in need of social case work was not considered a part of clinic management. The intent of the clinic management question was to ascertain the number of departments in which the medical social workers were responsible for the functioning of the clinic and, presumably, therefore, available to patients for case work interviews for limited periods of time only.

On this basis, in only 4 of the 11 departments reporting clinic management are medical social workers giving as much as half time to the administration of clinics. All 4 are departments combining direction of the outpatient division with social service activities. In 1 of them the workers so assigned are termed "clinic managers" by the director, although the entire group evidently are considered members of the social service department. The failure of half the personnel in this department to submit individual worker assignment schedules or personnel questionnaires makes it difficult to determine the exact nature of their responsibilities and their qualifications.

A larger proportion of time was devoted to both admitting and clinic management in departments which combine over-all responsibility for the outpatient department with social service; and it seems fair to question whether such combinations do not result in an undue proportion of administrative duties and a correspondingly inadequate amount of time for case work services to patients.

FOLLOW-UP PROCEDURES Experience and studies, especially in relation to venereal disease control, have demonstrated conclusively that the percentage of broken clinic appointments is in inverse ratio to the amount of time available for skilled case work services to patients at the time when diagnoses of major import to the patient are established. There is an increasing belief that social workers should follow only such patients as present conditions serious to themselves or to the community.

This survey attempted to ascertain the extent to which social

workers were responsible for routine follow-up in certain diagnostic groups. The services of workers in all the departments were available for follow-up of especially serious conditions or special types of disease, such as the venereal diseases, tuberculosis, cancer, rheumatic fever in children and adolescents, cardiovascular diseases, and diabetes. The five departments in specialized institutions considered the social worker responsible for follow-up of all patients in the disease categories treated.

Responsibility for the follow-up of cases of interest to the medical staff was reported by 8 departments, 7 of which were in institutions affiliated with medical schools. In one department this service was provided only in rare instances.

These data indicate that the social service departments studied consider themselves responsible for the general follow-up of patients if the clerical procedures of the clinic are not successful. The proportion of time devoted to follow-up should be weighed in relation to other demands. It is highly debatable whether social workers should be responsible for follow-up of all broken appointments or for securing the return of patients only for teaching or research purposes.

SELECTION OF CASES Few social service departments are staffed sufficiently well to offer as much service as may be needed in every clinic and ward. A selective service, directed toward meeting the needs of patients with serious disabilities, is considered a desirable optimum; but shortages of staff or other factors, such as lack of interest on the part of the medical staff, may lead to restricting the service given. Ordinarily, two methods of intake are used: (1) the social workers review the records of all patients in a particular diagnostic category with the intention of interviewing those who appear in need of social service; and (2) the department either accepts referrals of patients in any diagnostic category or limits acceptance to patients with specially significant conditions.

In the 5 departments in specialized institutions the general intent was to have the social worker review the records of all patients at the time of diagnosis or of all in the one diagnostic group to which the social service unit was assigned.

Only one of the sixteen departments in general hospitals and clinics reviewed the records of all patients admitted to the clinic; this was done daily. About half gave a selective service, combining the two methods of reviewing the records of all patients in particular diagnostic categories in the clinic or in the hospital and of accepting

referrals from selected services. Seven departments indicated that clinic intake was through referral only, although in three of them the social worker reviewed all cases in one diagnostic category. Four departments stated specifically that all "service" cases were reviewed at the time of the patient's admission to the hospital and that the social service department must approve the patient's discharge. One department is responsible for approving the discharge of all patients except those who have had minor surgery.

The sources from which these departments received cases were widely distributed. In most departments the bulk of the referrals came from physicians or other members of the staff. In four departments, however, the directors stated that the majority of their referrals came from the patient or from his relatives. All departments accepted referrals from outside social agencies, health agencies, interested organizations, or individuals.

Study of the extent to which private patients were referred to social service departments indicated no uniform policy, except for a general understanding that it depended upon the individual physician. Private patients were, in fact, referred to all the twelve social service departments to which the question applied. In one department referrals were made only for financial problems. In two departments the social worker took the initiative in interviewing all unmarried mothers who were private patients, and in one of these departments she interviewed all private patients with tuberculosis or cancer.

USUAL ACTIVITIES OF INDIVIDUAL WORKERS As one means of determining the nature of medical social practice in the institutions studied, each worker was asked to provide a statement of the services regularly assigned to her, together with an estimate of the time spent on each, and to check the pertinent items on a list of thirty-seven activities customarily performed on behalf of patients not otherwise receiving case work services. In addition, each worker was asked to keep a time sheet for five consecutive days, set up to show services given to patients known to the department for case work and services given to patients for whom such responsibility was not carried. Determination of the division between services to patients known to the department and services to those not known was based on the usual practice of considering as "known to social service" those patients for whom some degree of social study and treatment is undertaken, as contrasted with patients interviewed briefly and found to require only a minor and limited service.

When the assignment schedules and time sheets were analyzed, it was apparent that they afforded only limited evidence of the character of practice. Only the general conclusions which seem justified are presented.

The activities performed on behalf of patients not otherwise receiving case work services ranged from those appropriate to the social service department, such as sending medical reports to outside social agencies, to service as inappropriate as the taking of medical histories, charting temperature and pulse readings, and fitting crutches. The assembled data indicated the striking fact that every one of the thirty-seven items on the check list, no matter how inappropriate, was checked by at least one worker; a number of activities of questionable appropriateness were performed by one third to two thirds of the reporting group.

The following tabulation shows the type of services performed by the largest number of workers and the number of workers reporting performance of each service.

| <i>Service to Patients</i> | <i>Number of Workers</i> |
|--|--------------------------|
| Sending medical information to social agencies | 73 |
| Sending medical reports to medical or health agencies | 66 |
| Obtaining and transmitting information regarding community resources | 59 |
| Arranging taxi service for patients | 50 |
| Arranging for prostheses | 47 |
| Filling in agency forms | 45 |
| Follow-up for medical interest only | 44 |
| Securing medical examinations for members of patient's family | 41 |
| Arranging camp placements | 39 |
| Steering patients through the clinic | 31 |
| Selecting recipients of Christmas gifts | 30 |

When the check lists and time estimates are viewed as a whole, the finding of greatest significance is the fact that all these social service departments participate to some degree in a variety of activities which undoubtedly help individual patients or expedite the efficient functioning of the institution, but tend to divert consideration from a continuous, thoughtfully determined application of case work skills. To what extent these varied and unrelated demands on the

medical social worker detract from the quality of her practice could be determined only by an intensive study of all phases of a department's activity, with critical evaluation of a substantial sample of case records. In departments where workers give a third or more of their time to services of this nature, and in addition carry responsibility for admitting or clinic management, the time available for significant case work service will be curtailed greatly.

STUDY OF CASE RECORDS The statements of the directors of the twenty-one social service departments and the time sheet data indicated that in all except a few departments the major portion of each worker's activity was devoted to case work services. To determine the nature of their medical social case work practice, the survey staff read 258 case records chosen by the workers in twenty departments. The method used in evaluating the records depended on quantitative measures of case work designed to show those aspects of service receiving the most attention and emphasis. It was based on the assumption that certain essential steps in the case work process should be recorded in every medical social case record in order to make the patient's medical status and his social situation clear to the medical staff and to other social workers. Although obviously limited in what it can reveal of the quality of case work, this method of analysis was considered to have sufficient validity to justify its use.

Inadequate presentation of the reason for referral and of the medical situation in approximately one fourth of the records read appeared to be among the most striking of the findings revealed by the study.¹³ Of greater significance was the absence of any indication of consultation with the physician at any point during the handling of the case in more than half the records read. Although the fact that consultation was not recorded does not imply necessarily that it did not occur, this type of activity is sufficiently basic to sound practice to merit inclusion in the record.

The most significant indication of the quality of case work practice lay in the degree to which consideration was given to the patient's wishes and plans in discussion of his medical social needs and of his resources and capacities for meeting them. Half the departments studied maintained an apparently sound balance between discussion of facts about the medical and social situation and discussion of atti-

¹³ A full presentation of these findings is given by Alice James in "Medical Social Case Work in Twenty Hospitals and Clinics in Chicago" (unpublished Master's thesis, School of Social Service Administration, University of Chicago, August, 1947).

tudes and feelings. In the remainder, a greater degree of emphasis was given to inquiry into the facts of the situation, with correspondingly less emphasis, or complete lack of emphasis, on the patient's reactions and his own suggestions.

Another significant aspect of case practice is the evidence of analytical evaluation given by the worker to social diagnosis and treatment. In barely half the cases read did the worker record any evaluation of the findings revealed by social study or of the effectiveness and validity of the plan of service she was attempting to follow.

Although all except 4 directors stated that the Social Service Exchange was used regularly, its use was recorded in only 98 of the 258 cases read. While in many cases this service may not be necessary, in the judgment of the survey staff its use was strongly indicated in an additional 62 cases.

The departments varied in the extent to which their records met criteria used in evaluating them. In five departments the records fell so far below standard that these departments cannot be considered to be practicing medical social case work as it is currently understood. In another six departments enough question was raised concerning the quality of case practice to indicate the need for intensive study.

RECORDS AND STATISTICS

In common with social agency practice generally, hospital social service departments consider it essential to keep records of their work with patients "and thus preserve such information as is relevant to medical social study and treatment. There may be a full medical social record filed as part of the unit medical record, or separately. . . . When it is separately written and filed it should contain medical information pertinent to the social situation. . . . Social service notes may also be included among the medical progress notes or on a consultation sheet in the medical record if there is social information which is pertinent to the physician's care of the patient."¹⁴

Among the twenty-one departments studied, the general practice was to integrate the recording of pertinent social information with the medical records, a trend in accordance with recommended practice. Fifteen of the departments also kept a separate record in the department files. The adequacy of such recording, in content and form, was not determined.

The majority of the departments indicated that the social service

¹⁴ American Association of Medical Social Workers, *Statement of Standards*, p. 5.

record, no matter what its form, was not relied upon as a means of keeping the physician informed; this information was given in conferences for consultation and joint planning.

Seventeen departments reported regular use of the Social Service Exchange. It was not used by two departments in medical school clinics and two departments in venereal disease institutions with a stated policy of not registering patients.

Social service departments should be able to measure quantity of service accurately, and the values of such measures to efficient administration and appraisal of volume of work require no elaboration. In 1939 the American Association of Medical Social Workers, in consultation with the U. S. Children's Bureau, adopted a count of "patients served" as a uniform measure of service. To obtain this count, social service departments generally maintain a master index of all cases which become known to the department for case work service, and individual workers keep current files of their active case loads. In Chicago the Department of Research and Statistics of the Council of Social Agencies collects these "case counts" monthly.

Fifteen of the departments studied maintained a master index of cases. Six did not and in four of this group not even the workers kept individual files of active cases. Fourteen departments reported their case counts to the Council of Social Agencies. Two departments kept no count of any kind, either for departmental purposes or for central reporting.

TEACHING ACTIVITIES OF SOCIAL SERVICE DEPARTMENTS

It is considered sound practice for a social service department to give time to teaching medical students, nurses, or social work students when its case work practice is sufficiently well established to demonstrate clearly and adequately an appropriate service to patients.

Twelve departments, the largest number participating in teaching, were concerned with some aspect of the instruction of student nurses. The yearly time given to such instruction showed extreme variation, ranging from as high as 728 hours in one department and 624 in another to as little as 1 hour. The department giving the largest amount of time is also the largest department in the group and employs a supervising instructor, among others concerned with teaching and supervision. The department next in line, however, employs only three workers; and the amount of time given by the director to the teaching of nurses seems disproportionate to other responsibilities of

greater importance to the department. The third largest amount of time (220 hours) is given by a supervisor in an adequately staffed department and presumably is considered a proper allotment of her time.

Six departments offer field work instruction to students in a school of social work. The arrangements for this instruction differ, ranging from the assignment of one or two students to a staff worker to the employment by the school of field work supervisors who carry full responsibility within the social service department for a large unit of students. The time devoted to such instruction varies from 40 hours a week in 1 department in which 4 staff workers supervise students, to 9 hours given by the 3 staff workers who share the responsibility in another department. In all 6 departments offering field work instruction the department is responsible only for case work services to patients, and has no assigned duties related to the direction of the clinic.

Five departments indicated that time was given to the instruction of medical students or of interns and residents, in amounts varying from 2 to 60 hours a year (one department). The department giving the largest amount of time is in a medical school clinic with only 1 worker. One is affiliated with a medical school and also has only 1 worker. One has 2 workers; the other 2 are large departments.

Four departments give instruction to dietitians, 1 of which gives 196 hours a year. The other 3 give less than 10 hours a year each. Six departments, 2 in institutions associated with medical schools, do not participate in the teaching of any professional group.

From this scattering of teaching activities it is apparent that the bulk of effort and time goes to nurses and to students in medical social work. Relatively little attention is given to medical students or to interns and residents, and the department giving the largest amount of time to teaching medical students seems the least well equipped to demonstrate the appropriate activities of a medical social service department or the social components in medical care. Three of 4 departments directly associated with medical schools do not participate in teaching medical students.

PERSONNEL PRACTICES

The statement of personnel practices adopted by the American Association of Medical Social Workers in 1941 was used as a guide in

evaluating the personnel practices of the twenty-one hospital and clinic social service departments studied.¹⁵

Medical social workers employed in clinics and hospitals often find themselves at a disadvantage in respect to personnel practices in comparison with their colleagues in other health and medical programs, as well as with those in other social agencies. At the same time, occasionally the hospital social service department, although an integral part of an institution, may function under policies more liberal, in all or in a few respects, than those established for other departments of the institution. The present study ascertained the specific personnel practices of each department and the respects in which these policies differed from those for the institution as a whole. It did not attempt a comparison with the policies of social agencies in the community.

Twelve medical social service departments have personnel policies identical with those of the other departments in the hospital. In six departments, the personnel practices are more liberal in one or more respects than are those of the institution as a whole. In two, policies are more liberal in essentially every respect. One department, recently affiliated with a university hospital, has a more liberal policy with respect to overtime, but less liberal policies with respect to job classifications, salary ranges, or increases in effect for affiliated personnel. The director stated, however, that she was allowed considerable latitude in interpreting these policies. Four other directors also made the comment that they were permitted to interpret policies so much more liberally than were the other departments of the institution that personnel policies were altered in essential aspects.

JOB CLASSIFICATIONS AND SALARY SCALES The American Association of Medical Social Workers recommends "a job classification for each type of professional position in the medical social unit. Classification for each type of position should be based upon a recorded analysis of the duties which are being currently performed by the individuals occupying positions in the various classes. . . . A definite salary range should be prepared for each type of position with provision for periodic increases within the classification based upon merit of performance."¹⁶

¹⁵ American Association of Medical Social Workers, *A Statement of Personnel Practices: a Guide for the Medical Social Field*, Chicago, 1941.

¹⁶ *Ibid.*, p. 4.

Only eight hospital social service departments have moved in the direction of defining the classes of positions in the department, stating salary ranges, or providing for a schedule of increases. The remaining thirteen either have not recognized the value of developing such policies or have encountered opposition in doing so. While medical institutions have in the past functioned somewhat informally in this respect, it is sound administration, conducive to staff morale and to attracting qualified workers, to define staff positions and to state salary ranges and the basis for increase.

Fifteen departments have no stated policies with regard to promotion. Of the remaining 6, 2 base promotion on both performance and seniority, and 3 on performance only; 1 gave no information.

The salaries currently paid in Chicago to medical social workers in hospitals and clinics were reported by 105 of the 114 full-time workers who returned the questionnaires. The 21 departments in which these workers were employed showed marked variation in salary levels. In 10, the highest salary paid was less than \$220 a month.

Of the 75 case-worker salaries reported, 43 were less than \$200 a month, 28 were between \$200 and \$224, and 4 between \$225 and \$250. Nine of the 43 lowest salaries reported ranged from \$150 to \$174. The 5 aides received from \$125 to \$149 monthly.

Although the salaries in the range from \$175 to \$199 a month represent an increase of slightly more than 30 percent over salaries paid prior to the second World War and during the first two war years, in comparison with salaries paid in other social agencies the present scale still is far too low. It is highly probable, because of the current shortages of personnel, that a minimum of \$200 a month for a beginning worker with full professional education will be essential to attract qualified persons to the field.

The lowest salary range, reported for the 9 supervisors, was \$200–224, for 1 worker, and the highest, also reported once only, was \$275–299. Salaries ranging from \$225 to \$274 monthly were reported for the other 7. The higher figure represents more nearly a desirable minimum for a position expected to attract workers of exceptional skill in case work practice.

Three directors received as little as \$200 to \$224 a month, and 2, from \$225 to \$249. Three reported salaries of \$250 to \$274, and 1, \$275 to \$299. Only 7 of the 16 directors reported salaries of \$300 or more a month—again, a low scale for positions entailing administrative and supervisory responsibilities.

GENERAL CONDITIONS OF WORK *Hours*.—According to the American Association of Medical Social Workers: "A basic work week of thirty-eight hours is desirable. When the regular service of a department requires evening, Saturday afternoon, Sunday or holiday work, compensatory time off should be granted to workers. While the basic work week is fundamental to good practice, it is recognized that the professional responsibility of the medical social worker will occasionally require service beyond the working day. Unavoidable overtime should be compensated for by equivalent time off." ¹⁷

Only 6 departments are in institutions which have established weekly working periods of 40 hours or less, 2 essentially within the recommended standard, 36½ and 38½ hours weekly, respectively. Regular Sunday or holiday work is required by 3 departments, and occasional Sunday work by 2. Four reported that equivalent time off was given, 1 paid time and a half for occasional overtime.

In eight medical social service departments overtime is compensated by time-and-a-half pay. Ten hospitals either do not require overtime work or make no provision for it. One department makes no provision for overtime, which is constantly demanded by the job. Two hospitals did not report.

Vacations.—It is acceptable practice to grant a vacation period equal to 2 working days a month, 24 working days a year, or essentially 1 month. ¹⁸

Only 8 departments provide 4 weeks or 1 month of vacation. Five provide 2 weeks vacation, or only half the desirable amount. Four give 3 weeks, extended in one case to 4 weeks for workers who have been employed 10 years or longer. The remaining 4 institutions base the length of the vacation period on the length of employment, two granting 3 weeks and one 4 weeks after 5 years of service. One gives 4 weeks after 4 years of service.

Only 3 institutions provide vacations differing in length for various classifications of medical social service department personnel. In 1 of the 3, the workers are given 2 weeks vacation, and the director of the medical social service department, 4 weeks. In the other 2, medical social workers are allowed a 4-week vacation, with 3 weeks for clerical workers in one department, and 2 weeks in the other.

Terminal vacations are granted in 13 agencies. In 7 agencies the

¹⁷ *Ibid.*, p. 9.

¹⁸ *Ibid.*, p. 10.

worker forfeits her earned vacation if she terminates employment during the year. One hospital did not report on this item.

PROVISION OF SPECIAL PERQUISITES The trend appears to be away from the provision of perquisites in addition to salary: retirement allowances, supplying and laundering uniforms, meals, physical examinations, sick leave, maternity care, medical and hospital care.

Retirement allowances.—Only one institution provides a retirement allowance as a perquisite of employment. Eight institutions have retirement plans based on joint contributions.

Uniforms and meals.—Eight institutions either give no perquisites or arrange only for uniforms and laundry. Seven allow lunch, and five allow other meals, largely in connection with overtime.

Physical examinations.—A medical examination at the time of employment should be the first step in a total health program for personnel, yet only thirteen institutions make this requirement. Eight of the thirteen repeat the examinations periodically.

Sick leave.—Eleven institutions grant 2 weeks of sick leave per year; three, from 6 to 14 working days; one, a week during each 6 months (not cumulative for the year), and two, 30 days. Three institutions make no provision, and one grants sick leave only at the discretion of the director. Three institutions allow unused sick leave to be added to vacations.

Maternity leave.—The American Association of Medical Social Workers has given no specific standard for maternity leave, stating only that it "should be consistent with good obstetrical and social practice and based on the needs of the individual."¹⁹ Established policies were reported for only six institutions: Four grant maternity leave at the discretion of the director of the medical social service department; one provides six months of leave, extended at the discretion of the director; one grants three months of leave.

Medical and hospital care.—Ten institutions provide medical care as a perquisite, 7 granting medical care as needed, 1 providing health service and minor treatment, and 1 minor service only. The remaining hospital allows employees a 20 percent discount toward medical care. Nine hospitals provide hospital care as needed; 4 others make some provision toward the cost. Fifteen institutions subscribe to contributory plans, contributions being made jointly by hospital and employees. In 10, subscription to the plan is optional; in 5, required.

¹⁹ *Ibid.*, p. 11.

PROVISION FOR EDUCATIONAL LEAVE Eleven institutions provide both for attendance at classes and for educational leave, under certain circumstances, in most cases at the discretion of the educational director. Five institutions make no provision either for attendance at classes or for educational leave, although the director of social service in one department believes that class attendance might be permitted. Four institutions grant time for both attendance at class and educational leave. Unused class attendance time may be accumulated and added to vacation to permit six weeks of educational leave. One hospital allows only educational leave.

The granting of permission for attendance at class and for educational leave requires consideration of the number of staff in each department, as well as their need for professional education. An administrator is responsible primarily for the coverage of services assigned to the medical social service department; if her staff is already inadequate in number, she cannot deplete it further, nor can she place an additional burden on her other workers.

STAFF DEVELOPMENT After well-qualified personnel have been selected, they should be offered opportunities for further professional development and growth through appropriate individual supervision and participation by each worker in group processes and planning.

Orientation.—Staff development logically starts with the new worker's introduction into the agency. A definite orientation plan is of value to the worker, the patient, and the department. Only thirteen medical social service departments had sufficient staff to be considered in this connection. Seven of these departments have: (a) definite plans which involve responsibility for induction vested in one person; (b) a period of time allotted for orientation, and (c) both oral and written instructions and descriptions of the job. The amount of time allotted varied. One department has a comprehensive plan for orientation, but the director may be unable to devote as much time to the plan as may be necessary, since she acts as director of both the medical social service department and the clinics. One hospital, also providing a definite plan for orientation, depends upon oral explanation of the job and does not provide the new worker with a written policy book. Four hospitals have orientation programs which appear to be vague in plan or which place responsibility for orientation on someone who has numerous other duties.

Supervision.—The American Association of Medical Social

Workers states that "the existence and use of expert supervision are fundamental to the department's program for the professional development of staff and are reliable indices of the quality of its service."²⁰ Discussion about supervision applies only to 13 departments which employ more than 2 workers. In 8 departments the director of social service is responsible for case supervision. These departments employ from 3 to 9 workers, and, obviously, in the larger departments each worker can be given only a limited amount of time. In 4 of this group the director of social service is responsible also for outpatient department administration. Only 1 department, the largest in the city, employs case supervisors who carry no other responsibilities. Eight workers are assigned to each supervisor. At the other extreme, in 1 department with 3 workers, the case supervisor carries responsibility for a selected case load of clinic and hospital patients in addition to her supervisory duties. This method was adopted partly because of staff shortages and partly as a means of demonstrating medical social case work in services previously without social workers.

In 1 department with 3 workers the case supervisor devotes almost full time to supervision, but carries a small case load and limited administrative responsibilities. In 2 departments experienced workers with supervisory status are responsible for one or more workers on a given medical service, in addition to carrying a case load.

Group participation.—Through group participation workers are enabled to acquire perspective toward their jobs and to develop a wider range of interests. "Staff meetings and group conferences . . . are a potential means of development of the individual worker through the use of group process in planning and participation."²¹

A program which includes staff meetings is applicable only to the 11 medical social service departments with 3 or more workers. Of these, 5 meet weekly; 4 every 2 weeks; 1 monthly; and 1 "very irregularly." For the most part, meetings are planned by the director of social service and a staff committee; in 1 instance by a staff committee alone; and in 1 by the director alone.

The agenda of most staff meetings include discussion of policy and procedure, but emphasis is centered elsewhere. Several departments discuss case work techniques and problems, intra- and extra-agency relationships, reports on meetings attended, and professional litera-

²⁰ *Ibid.*, p. 8.

²¹ *Ibid.*

ture. Three direct particular interest to national events which concern social work. Five departments have a psychiatrist available for group conferences on case work.

Attendance at meetings and committees.—Sixteen medical social service departments allow and encourage workers to attend committee and other meetings. Five social service directors do not consider these activities of particular importance to the worker's job, but did not state definitely whether attendance was permitted.

Five departments pay the full expenses of both the director and the workers who attend the National Conference of Social Work. One department pays the full expenses for the director only; four pay partial expenses.

OFFICE AND OTHER FACILITIES The efficient management of a medical social service department requires a central social service office, offices which afford privacy for workers, sufficient telephone service to avoid long delays, and filing space. Adequate clerical staff is imperative if the time of the medical social worker is to be devoted to her professional duties.

The facilities of the medical social service departments studied leave much to be desired. Two of the largest departments have no central office, and efficient administration is thereby handicapped. In ten departments, from two to nine workers share a common office. In one hospital, all workers have desks throughout the large general clinic admitting room. Eight hospitals have grossly inadequate telephone service. Five departments have inadequate filing space.

The departments reported that their greatest difficulty lay in securing enough clerical service properly to complete medical social records. For the most part, typing of records is delayed by the clerical staff until other duties have been discharged. In nine departments records must be written in longhand by the medical social worker. In five of these departments, the medical social workers have assumed all the clerical duties of the department.

Fifteen directors stated that their records were not current, that work was not fully recorded, or that both limitations existed. Six stated that recording was both complete and up-to-date, but three of these keep only brief records, filed in the worker's office.

HOSPITALS WITHOUT MEDICAL SOCIAL SERVICE DEPARTMENTS

"It is believed that all hospitals have a place for the medical social worker, inasmuch as every patient, rich or poor, is liable to have a

medical social problem.”²² Of the 101 hospitals and clinics included in the medical social service section of the Chicago-Cook County Health Survey, 76 are without medical social service departments. Questionnaires were sent to these 76 institutions to determine their need and desire for medical social service and the means they used to meet the social problems of their patients.²³ Thirty-eight general hospitals, 11 special hospitals, and 6 clinics (a total of 55, or approximately 72 percent) supplied information, including 4 which secure general social services for their patients through other agencies.

METHOD OF HANDLING MEDICAL SOCIAL PROBLEMS Of the 34 hospitals which furnished information regarding the number of medical social problems arising in a month, 29 reported fewer than six. It proved impossible to estimate the extent to which the determination of financial eligibility for free care presented any problem. For the most part, clerks conducted the admitting interviews, although in some instances this activity was the responsibility of the superintendent, the medical director, the nurses, the “health department,” the Mother Superior, or an executive secretary. Referrals of patients to other hospitals or clinics are made by the patient’s own physician in most instances, occasionally by the medical director or the superintendent of a hospital or a clinic, and sometimes by nurses, clerks, or others.

In 11 institutions the patient who became anxious or disturbed, who wanted to leave the institution against advice, or was difficult to manage was the responsibility of the patient’s own physician; in 5, of the medical director, a nurse, or the superintendent. In 18 hospitals, these three related problems were met by a variety of personnel in the same hospital.

Problems in connection with convalescent care and with camp or school placement of children were handled usually by the patient’s own doctor; occasionally by the superintendent, the medical director, or the nurse.

Arrangements for patients needing commitment to a state hospital were generally the responsibility of the patient’s own physician, sometimes of the hospital administrator, the medical director, a nurse, or an executive secretary.

USE OF COMMUNITY AGENCIES It was impossible to determine

²² *Hospital Survey for New York*, p. 536.

²³ No questionnaires were sent to the Oak Forest Infirmary or to the Municipal Tuberculosis Sanitarium, because it was believed that these institutions needed more intensive study than could be given within the scope of this survey.

the extent to which these fifty-five hospitals utilized the services of community agencies. The agencies used most frequently were the Veterans Administration, the American Red Cross, the Chicago Department of Welfare, and the Cook County Bureau of Public Welfare, all of which have funds to reimburse hospitals for care of their clients. The extent to which the hospitals called on these agencies essentially for purposes of reimbursement of the hospital rather than for social case work services could not be determined. Church hospitals made frequent use of sectarian relief and social services. Several hospitals reported use of the Illinois Children's Home and Aid Society, the Salvation Army, and the Division of Services for Crippled Children of the University of Illinois.

No relationship was apparent between the number of problems arising in a hospital and the number of agencies used, nor was any relationship evident between the number of agencies used and the type of personnel making the referral.

HOSPITAL ADMINISTRATORS' ATTITUDES TOWARD MEDICAL SOCIAL SERVICE All except two administrators stated that the social needs of the patients in their institutions were being met satisfactorily. They stated further that existing personnel was equipped to give adequate attention to the few patients who presented these problems. Of the two replying in the negative, one, the director of a clinic associated with a settlement house, stated that the clinic "needs medical case work services for more adequate admission standards and service to individual families." The administrator of the second hospital expressed the desire for an "understanding of medical social services available, since such agencies could be helpful to us."

One administrator stated that the services of his hospital were adequate, but that the hospital contemplated adding a medical social service department in the near future. Considerable confusion as to medical social service functions was apparent in the replies. Many administrators seemed to think of medical social service only in connection with the giving of financial assistance and stated that "as a private hospital we have no such problems as you present." Others stated, "we attempt to take care of everyone on a humane and scientific basis regardless of race, creed, or color," and thus appeared to have medical social service confused with philanthropic benevolence.

Several hospital directors gave the title "social worker" to unqualified persons who were not functioning in that capacity.

FAILURE TO RECOGNIZE MEDICAL SOCIAL NEEDS It is evident

that in hospitals without medical social service departments the administrators do not recognize the existence of social needs often inherent in illness and medical treatment. This lack of perception is due in part to the general concept that patients able to pay hospital and physicians' bills are otherwise self-sufficient. The various non-professional personnel in these hospitals who deal with patients have not received the training needed for awareness of the social implications of the patients' problems in terms of medical treatment, nor is such knowledge and skill ordinarily within the professional competence of physicians, medical directors, superintendents, and nurses. Moreover, even if they were so equipped, these professional groups are too busy and carry too heavy responsibilities to undertake systematic or continuous evaluation of the medical social needs of every patient.

The American College of Surgeons, in its statement of minimum standards for hospitals, has for many years considered medical social service essential,²⁴ and the American Hospital Association has given consistent support since 1920. In view of the long existence of medical social service in Chicago and the increasing emphasis in medical practice on the significance of social and psychological factors in illness and medical care, the lack of understanding evidenced by three fourths of the hospitals and clinics in the city points strongly to the need for enlightenment of both physicians and hospital administrators.

COMMENTS AND CONCLUSIONS

In most medical institutions in the Chicago-Cook County area medical social case work services either are wholly lacking or are inadequate in scope and intensity. Although medical social service in Chicago hospitals started in 1911, only 10 of the hospitals with social service departments are offering services that can be considered adequate; 6 are giving services of doubtful adequacy; and 5 cannot be said to be practicing medical social work according to any acceptable definition.

Adequacy of service is affected by the place of the department in the total medical care organization; the duties required of the workers; their qualifications; and the emphasis given case work services as the primary responsibility of the department.

Of the 21 departments, 13 function as divisions of service within

²⁴ American College of Surgeons, *Manual of Hospital Standardization*, Chicago, 1945.

the hospital co-ordinate with other units, are responsible directly to the administrator, and direct their activities entirely to social services for patients. Six of the remaining 8 departments carry responsibility for direction of the clinic, as well as social service activities; and 2, with one worker each, are assigned clinic duties as well as case work services.

The combination of clinic administration and social service is an outgrowth of an earlier period when the outpatient department was primarily for the so-called "charity" patient, and social workers were employed to establish financial eligibility and to assist needy patients to carry out medical recommendations. Today, the most significant contribution of medical social work is case work service focused on the total economic, environmental, and personality needs of sick persons. The 6 departments in Chicago which continue to combine direction of the clinic with social service activities, and the 2 using the single worker employed for clinic duties, represent essentially unsound organization if a concentration on case work service is expected. A re-evaluation of the proper functions of the medical social workers in these departments is essential to the most constructive use of their time and skill.

All 21 departments appear to be an integral part of the medical care programs in the institutions in which they function. It is regrettable, however, that in only 8 departments do the directors administer their departments on the basis of approved department budgets. In 5, funds are earmarked for social service in the general budget, but directors must secure approval for each expenditure or new appointment as the situation arises. Even more questionable is the combining of the budget for social service with the total clinic budget, as in 5 of the 6 institutions in which the director administers both the outpatient and the social service departments. In these instances it would seem more than likely that the social service aspects might suffer when funds are limited or the clinic needs are exceptionally great. The lack of a departmental budget is not conducive to sound administration.

The present relationships of the auxiliaries or committees to their social service departments are not defined clearly. In many instances these committees appear to be used primarily for fund raising; in others they are relied on for "interpretation of the department to the community," but there is little evidence of a vital and growing relation between committees and departments. Further study might well

be given by individual departments to the most effective use of the interest and good will of these lay groups.

It is deplorable to find that only half the social workers have had full professional education. One fourth have had no professional education in social work, and another fourth only partial education. Professional education in medical social work has been available in Chicago for twenty-five years; and the high proportion of persons under fifty years of age with partial professional education or none at all can be accounted for only by such factors as their own disinterest, the lack of understanding by hospital administrators of the need for suitable preparation, low salaries, and the absence of provision for educational leaves.

The use of medical social workers in clinic administration and in a variety of managerial and interpretive services to patients diffuses their time and energies and diverts effort from thoughtful, continuous study and treatment of the social problems of the patients in greatest need of such service. Workers assigned to such responsibilities cannot at the same time give the highly concentrated effort essential in case work service or in the development of their professional skills.

Closely related to the lack of understanding of the contribution of medical social case work to medical care is the limited use of case supervisors. A case supervisor devoting full time to the development of case work services of high quality seems essential in departments of six or more workers. A ratio of one supervisor to eight workers probably would be adequate, unless a substantial part of the time of the supervisor were given to the teaching of other professional groups.

The directors in two departments of the twenty-one appeared to be giving an undue proportion of their time to the teaching of student nurses. When a nursing school wants instruction in social problems as part of its curriculum, it should arrange to employ a person for as much time as is needed. A social service department should not be expected to offer more than a small portion of staff time to the teaching of any professional group until its own practice is well established, and it has a sufficient number of workers to give fully adequate service to patients.

The entire area of personnel practices in the Chicago-Cook County institutions shows so little uniformity or conformance to professional social work standards that detailed study by the departments would

seem essential. The absence of job classifications places medical social work in hospitals in an unfavorable position as compared with either public medical care and health programs or social agency practice in general. Obviously, any movement toward improvement of salary scales will require uniform definitions of job content; such formulations are long overdue in hospital social service departments. Other practices also, especially with regard to periodic health examinations of employees and the provisions for medical care, need careful study and revision.

When the foregoing criteria are applied to each of the 21 departments, it is possible to range them in three groups,²⁵ according to the adequacy of the medical social service rendered. Group I includes 10 departments believed to be offering an appropriate service to their patients. Group II includes 6 departments in which the soundness of function and the adequacy of service available seem open to question. In Group III are 5 departments which cannot be considered by any standard to be doing medical social work. These groupings, however, are conditional and require further comment.

Of the 10 departments in Group I, none has responsibility for the administration of outpatient services, and all but 2 are departments of 4 or more workers. The fact that the majority of these departments are well staffed and that all are able to devote full time to case work has resulted in sounder service than is possible when attention must be divided between clinic administration and individualized services to patients.

Of the workers in the departments in Group I, the majority in each department have had full or partial professional education. In only 4 of the 10 departments are there any workers without professional education, and there is only 1 such in each department.

For the 6 departments in Group II, the nature of the practice is open to question. In 4, the department is responsible for clinic administration as well as for social service to patients. In all 6 departments, the case records submitted indicate that the case work function is understood, and in several instances carried out with skill; but the fact that the staffs, with one exception, are small and that clinic duties occupy a major portion of their time results in a limited amount of such service. The qualifications of the workers in all the Group II

²⁵ The only public institutions in these groupings are: Cook County Hospital and Illinois Eye and Ear Infirmary in Group I; Chicago Intensive Treatment Center in Group II; and the Research and Educational Hospitals of the University of Illinois in Group III.

departments are substantially below the level found in Group I. Addition of qualified workers, dropping responsibility for clinic administration, and, in 2 cases, complete reorganization of the department are needed. In 1 department it is difficult to determine whether the inappropriateness of some of the services rendered is within the control of the department or related to the nature and direction of the institution within which the department functions. There are indications that the latter situation is the case and that duties inappropriate to medical social work have been superimposed on a staff not sufficiently large in the number of its qualified workers to withstand the pressure.

Of the 5 departments in Group III, none can be considered to be doing medical social work. Four are responsible for clinic administration; the fifth is a department in a hospital where the one worker employed carries a variety of responsibilities, chiefly related to financial adjustments. The case records of these departments reveal only partial and extremely limited applications of the case work process. The workers in 3 departments have had no professional education in the field of medical social work.

RECOMMENDATIONS

It is recommended that:

1. The directors in the twenty-one medical social service departments in Chicago hospitals and clinics shall review the activities of their departments, to define more clearly the services appropriate to the primary case work responsibility of the field.

2. Directors shall evolve sound guides for determining the numerical adequacy of social service departments, with consideration of clarification of job content and of the professional qualifications of personnel.

3. Sufficient clerical personnel shall be employed to relieve the professional workers of clerical duties and to enable case workers to record their practice adequately.

4. The following changes shall be instituted in the six departments in Group II offering services of doubtful adequacy: (a) Four departments responsible for the administration of the clinic, as well as of the social services to patients, shall be reorganized to separate clinic administration and case work into divisions independent of each other, with augmentation of present staffs of qualified and partially qualified workers in each of these departments, and with em-

phasis directed to medical social case work. (b) The staff of one small department responsible only for case work services shall be increased by at least two fully qualified medical social workers, to enable the department to extend adequate services to patients and to offer instruction to nurses and medical students. (c) The department in the Chicago Intensive Treatment Center shall be expanded and its case work services strengthened through the addition of more qualified medical social workers.

5. The five departments in Group III not offering acceptable medical social services shall be completely reorganized as follows:

(a) The three departments associated with medical schools should employ qualified staff under competent direction to develop social service activities in units independent of clinic administration, with a sufficient number of medical social workers and supervisors to enable the departments to share in the instruction of medical students and nurses. (b) One department in a private hospital shall replace the single worker employed for its "service" patients by two qualified medical social workers, and reorganize the activities of the department to offer case work services, and one department in an unofficial venereal disease clinic shall replace the single worker employed by a qualified medical social worker and reorganize the assignments to permit concentration on medical social case work services.

6. The Council of Social Agencies of Chicago shall continue to exert every effort to raise the standard of medical social practice in all medical social service departments and particularly in the eleven departments in Groups II and III.

7. The Council of Social Agencies, in consultation with other appropriate professional groups, such as the Chicago Hospital Council and the Chicago Medical Society, shall encourage the formulation of job classifications, with descriptions of the duties for each class, for the guidance of hospital social service departments.

8. The salary scales for medical social workers in Chicago hospitals shall be reviewed and revised to attract and to hold qualified personnel.

9. Medical social service departments shall be granted formally approved budgets to plan for the needs of the department.

10. Hospital administrators and directors shall arrange for either educational leave or class attendance, or both, for members of their staffs eligible for admission to accredited schools of social work, to the end that persons not now qualified by professional education

shall be encouraged and assisted in securing full preparation. It is further recommended that completion of professional education for eligible staff members under forty years of age shall be made a condition of promotion and salary increase.

11. Directors shall employ case work supervisors in departments with more than six workers.

12. Directors of hospitals and clinics without social service departments, especially the large public institutions, shall review the needs of their organizations in regard to medical social service activities and, where the need exists, shall either establish departments or secure case work services through other social agencies or through a pool of qualified medical social workers serving several hospitals. Leadership in implementing this recommendation might well be given by the Council of Social Agencies and the Chicago Hospital Council.

MEDICAL SOCIAL WORK IN TWO PUBLIC WELFARE AGENCIES

The organization and medical care programs of the Cook County Bureau of Public Welfare and the Chicago Department of Welfare were outlined in Chapter 45. This section describes the functions of the medical social workers in these two agencies,²⁶ the personnel practices of the agencies, the workers' qualifications, and the results of a study of the activities of medical social consultants.

The employment of medical social consultants in public assistance agencies was developed in the depression years. They were employed for the first time by the Cook County Bureau of Public Welfare in its district offices during the winter of 1932-33 to assist the case workers in planning needed medical assistance for relief clients. These services later were established as a separate division of the bureau, called the Medical Relief Division. In 1935 this division was transferred to the Chicago Relief Administration, now the Chicago Department of Welfare. Impetus to the development of a similar program in the Cook County Bureau of Public Welfare for recipients of Old Age Assistance, Aid to Dependent Children, and Blind Assistance was given by the implicit charge in the three state assistance acts that the responsible unit of government provide medical care "compatible with health and well-being" to their groups.²⁷ The

²⁶ The survey of these two agencies was conducted by Miss Marjorie Bates, and the findings and recommendations presented in this section were formulated by her.

²⁷ Illinois Public Aid Commission, *Laws of Illinois Relating to Public Aid, 1945-47*.

bureau appointed a medical social worker in 1941 to organize a medical care program, which was established in March, 1942.

FUNCTIONS OF THE MEDICAL SOCIAL CONSULTANT At first, medical social work consisted almost wholly of direct case work services to individual patients. In more recent years, the development of state-wide and nation-wide medical care programs has required the services of the medical social worker in relation to a very large number of patients. Her role in this area has changed to that of a consultant in relation to (1) the social aspects of the total program; (2) the development and maintenance of co-operative working relationships with community agencies and physicians concerned with medical care; (3) the assistance of social workers and others in their understanding of the social aspects of illness and medical care. "Such consultation is based on the principles derived from the practice of medical social casework and can be regarded as a natural extension of that activity."²⁸ In the Cook County Bureau of Public Welfare medical social workers are also in control of medical expenditures, inasmuch as their knowledge of the medical needs of the patient, as well as of the medical costs of needed care, adapt them particularly for this function.

Cook County Bureau of Public Welfare.—Of the 8 medical social workers employed in the Medical Department of the Cook County Bureau of Public Welfare, the supervisor of medical assistance and 2 assistant supervisors comprise the medical social staff of the central administrative office. The 5 other workers, called consultants on medical assistance, are located in the 5 district offices.²⁹ The supervisor of medical assistance is responsible for the administration, planning, and development of the medical care program. She is responsible administratively to the division director of the bureau. She extends her contacts to advisory committees, division meetings, community group meetings, and meetings with the staff of the Illinois Public Aid Commission.

One assistant supervisor has worked as a supervisor of medical assistance in the Blind Assistance program since October 1, 1945. This service became necessary as a result of the enactment of legislation in Illinois, on July 9, 1943, "to repeal an act in relation to blind persons and make appropriations for certain administration expenses inci-

²⁸ Harriet M. Bartlett, "Medical Social Work," in *Social Work Year Book*, New York, Russell Sage Foundation, 1945, p. 263.

²⁹ The terms used to describe medical social workers in the two agencies are the classifications given by the agencies.

dent thereto.”³⁰ The supervisor is responsible for the development of this program in relation to staff education; she arranges for eye examinations to determine the applicants’ visual eligibility for Blind Assistance, and she provides such follow-through services to each applicant as are required as a result of the physicians’ examinations. She is responsible also for staff education in regard to problems of the blind.

The five consultants in medical assistance in the district offices have a consultative responsibility in medical social planning for recipients and a responsibility for the reviewing of medical need. Each consultant is responsible administratively to the supervisor of the district in which she works, but functionally her responsibility is to the supervisor and assistant supervisors of the Medical Department.

Chicago Department of Welfare.—Eight medical social workers are employed in the Medical Division of the Chicago Department of Welfare, the director and seven workers under her supervision. Their titles and activities are as follows: the assistant to the director, called supervisor of medical assistance, who acts as a medical unit supervisor in the Children’s Medical Unit in addition to her general supervisory duties; a medical unit supervisor in charge of the Medical Review Unit; a medical assistance consultant in charge of the Dental Examining Unit; a medical unit supervisor employed part time at the Convalescent Home operated by the Chicago Department of Welfare; a senior medical social worker who assists in the Children’s Medical Unit; and two senior medical social workers who serve as consultants to the Family Division. All are responsible, administratively and functionally, to the director of the Medical Division, with the exception of the worker at the Convalescent Home. She is responsible functionally to the Medical Division director and administratively to the director of the Convalescent Home.

The senior medical social worker in the Children’s Medical Unit arranges for necessary medical care of the children examined periodically in the Well Children’s Clinic program of the unit. Both she and the supervisor of medical assistance give consultation service to the staff of the Children’s Division of the Chicago Department of Welfare. The medical unit supervisor attached to the Convalescent Home co-ordinates all medical social planning for the patients, determines, in consultation with the physicians, the eligibility of all patients admitted; arranges suitable placement upon discharge, and

³⁰ *Laws of Illinois Relating to Public Aid, 1945-47, Section VI.*

serves as a liaison officer between the Convalescent Home and outside agencies. She also acts as a consultant to the case work staff.

Two medical social workers, one paid by the Catholic Charity Bureau and the other by the Veterans' service, act as consultants on medical social problems in the Catholic Charity Section and the Veterans' Relief Section of the Chicago Department of Welfare. While these sections are operated by outside agencies, the programs supervised by the two medical social workers are identical with that of the Medical Division of the Chicago Department of Welfare, and the workers are functionally responsible to the director of the division.

PERSONNEL POLICIES AND CONDITIONS OF WORK The medical social workers on the staff of the Cook County Bureau of Public Welfare are chosen from the list of persons qualifying for the positions through civil service examinations. A vacancy is filled by the person highest on the list of such persons. This worker is appointed by the Civil Service Commission and assigned by the director of the Cook County Bureau of Public Welfare. The appointee is subject to a probationary period of six months, during which time she may be released if her services are not satisfactory. In the absence of a civil service list for the position in question, qualified persons may be appointed on a temporary basis until another examination for this position is given. Before such temporary appointments are made, the supervisor of the Medical Department is consulted with reference to the qualifications of the prospective appointee. A physical examination is required of persons appointed on a temporary basis, and good health is necessary for employment. This examination is not repeated except after return from a leave of absence. In that case, the agency provides the physician.

The Chicago Department of Welfare makes no appointments through civil service examinations, but selects and appoints all workers in accordance with personnel standards and job classifications set up by its Personnel Department. Physical examinations are not required for employment. The director of the Medical Division is responsible for the final approval of all professional and clerical staff appointments to her division and may reject prospective appointees who do not meet the requirements of the position. She has the same degree of authority in relation to the dismissal of workers under her supervision.

The Cook County Bureau of Public Welfare has no plan for

medical or hospital care. There is a pension system, effective after ten years of employment. In the Chicago Department of Welfare there is an optional insurance plan for hospital care, but no plan for retirement allowances.

Hours of work, vacations, and leaves.—Both agencies have developed written statements of policy which are similar in some respects and differ in others. The Chicago Department of Welfare has the longer work week, 166 hours per month. The Cook County Department of Welfare requires 144 hours per month, divided into a five-day week of 7 hours per day and 4 hours every fourth Saturday. There is no Sunday or holiday duty. Both agencies grant compensatory time off for overtime work.

Both grant paid vacations of 2 weeks, with an additional week if that time remains from unused sick leave. Both grant terminal vacations. Both allow 15 days of sick leave with pay. The Cook County Bureau of Public Welfare permits leave of absence without pay for periods up to 1 year for illness, maternity, and education; the Chicago Department of Welfare limits such leaves to 6 months. The Chicago Department of Welfare may grant leave without pay for other purposes for a period not to exceed 31 days after a year's employment.

In the Chicago Department of Welfare attendance at classes is allowed up to four hours per week, but this time must be made up during the calendar month. Time off is allowed for attendance at professional conferences, institutes, and committee meetings. Partial expenses are allowed to the director only for attendance at conferences. The Cook County Bureau of Public Welfare grants time off with pay for late afternoon classes. Two days per week without pay are allowed for field work training.

Salaries.—The Cook County Bureau of Public Welfare grants salary increases of \$10 per month every six months to staff workers whose beginning salaries are less than \$250. For staff members who start with \$250 or more, salary increases are granted at the discretion of the director. Promotion to higher classifications is on the basis of performance.

The Chicago Department of Welfare has designated minimum and maximum salaries for the various job classifications established and grants salary increases up to the maximum for medical social workers on the basis of merit and performance. Evaluations of performance

made six months after employment and annually thereafter are used partly as a basis for increases.

While the salaries reported by the sixteen workers in the two agencies are good in comparison with some other positions in medical social work, they are not commensurate with the skill and experience required for these positions. The job classifications by salary ranges in the two agencies are as follows: one director and one supervisor of medical assistance, \$300-\$349; one supervisor of medical assistance, \$275-\$299; one assistant supervisor of medical assistance, one medical unit supervisor, and one medical assistance consultant, \$250-\$274; one assistant supervisor of medical assistance and, three medical assistance consultants, \$225-\$249; three senior medical social workers, \$200-\$224; two medical assistance consultants, \$175-\$199; and one part-time medical unit supervisor, \$125-\$149.

Both the supervisor of the Medical Department of the Cook County Bureau of Public Welfare and the director of the Medical Division of the Chicago Department of Welfare hold regularly planned meetings with their staffs, which provide an opportunity for discussion of new policies and procedures, community facilities, and other topics which will assist and stimulate the staff in their work. In the Chicago Department of Welfare the staff participates in the planning of the meetings and in the decisions made. In the Cook County Bureau of Public Welfare, the staff workers participate neither in the preparation of material nor in decisions in regard to the procedures in the medical care program.

Office space and other facilities.—The office space in both agencies is considered inadequate in certain respects, particularly privacy for consultation services. In the district offices of the Cook County Bureau of Public Welfare the space for the medical social workers is very limited, poorly located, and crowded, and their telephone service is inadequate. Neither agency has sufficient clerical, stenographic, or typing assistance.

QUALIFICATIONS OF PERSONNEL Sixteen medical social workers submitted personnel questionnaires. This number represented all the medical social workers employed by both agencies at the time the survey was made.³¹

³¹ The sixteen reporting workers include one temporary worker who was a vacation substitute. The two medical social workers employed in the Catholic Charity and Veterans' Relief sections are not included.

Twelve workers had completed the 2-year graduate program of professional education for social work, and 4 had had some college education, but had not obtained a degree. Two of these 4 had certificates in nursing and had taken additional courses in social work. Both had had more than 10 years of social work experience. The third had had more than 15 years of social work experience and 2 semesters of graduate work, and the fourth, more than 5 years of experience and $4\frac{1}{2}$ quarters of social work. All meet the qualification requirements approved by the Health Division of the Council of Social Agencies of Chicago.³²

The medical social work experience of the sixteen workers was as follows:

Three to five years

- 1 worker with full professional experience
- 1 medical assistance consultant

Six to ten years

- 2 medical assistance consultants
- 2 senior medical social workers

Eleven to fifteen years

- 2 medical assistance consultants
- 1 senior medical social worker

Over fifteen years

- 1 director
- 1 supervisor of medical assistance

More than fifteen years

- 2 medical unit supervisors
- 2 medical assistance consultants
- 1 assistant supervisor of medical social work

Three years was the minimum period of experience, and nearly twenty years the maximum. These figures indicate that the group had had a high experiential preparation for their work.

Other factors commonly used as measures of workers' qualifications are membership in professional organizations, participation in the work of professional committees, attendance at conferences, subscriptions to professional journals, and the publication of articles.

Fourteen of the 16 workers were members of the American Asso-

³² Council of Social Agencies of Chicago, *Standards for Medical Social Service Departments*—Approved by the Executive Committee, Health Division (October 1, 1940).

ciation of Medical Social Workers. Two of the 14 also belonged to the American Association of Social Workers, and 1 to the American Nurses' Association. Five workers were members of 15 local committees. Four attended 6 national conferences, and 10 attended 19 local conferences.

Seven workers subscribed to a total of 14 magazines. That the other 9 reported no subscriptions may be due to the fact that professional literature is available in their offices. Only 2 workers had published articles. One had 11 to her credit, none directly associated with the medical social work field; the other had published 1 article on medical social work. Because of the great pressure of work in both agencies, it is understandable, perhaps, that staff members have lacked the time needed for preparation of articles, a regrettable loss to the agency and to the field of medical social work. The desirability of employing enough workers to enable them to spend time on research is indicated in one of the recommendations.

ACTIVITIES OF MEDICAL SOCIAL WORKERS IN THE TWO AGENCIES
Impressions gained from conferences with the workers in the two agencies and a sample study of case records indicated that the effectiveness of the services rendered by the medical social consultants could not be gained by record study. Instead, two very detailed schedules were used as time sheets to check the individual worker's duties and to test as many of her functions as could be tabulated. Schedules were used by the workers in one agency for a two-day period and in the other for a shorter time. The directors of the two agencies, however, considered the sample obtained in this way representative of the work done by their medical social staffs. The two schedules attempted to cover (1) consultation or indirect service, (2) interviews or direct service, (3) miscellaneous services, and (4) clinic management. The term "consultation," as used in this study, refers to any service performed in behalf of the client without direct contact with him, including correspondence and review of case records or other records sent to the medical social worker for her judgment and decision.

Study of the schedules indicated that the workers in the Chicago Department of Welfare spent about 75 percent of their time on consultation or indirect service, about 12½ percent on interviews or direct service, about 7½ percent on miscellaneous duties, and 5 percent on clinic management. In the Cook County Bureau of Public

Welfare about 67 percent of the workers' time was spent on consultation or in direct services, about 8 percent on interviews or direct service, and about 25 percent on miscellaneous duties.

Since consultation is the principal function of the medical assistance consultants, from the viewpoint of the two agencies, allotment of a large percentage of their time to consultation appears reasonable. In the Chicago Department of Welfare 35 percent of the consultation time was spent with the case workers, 35 percent with agencies and others, and 15 percent each with supervisors and physicians. The percentages found for the consultation service rendered by the workers in the Cook County Bureau of Public Welfare were similar: with case workers, 38 percent; with agencies or others, 33 percent; with supervisors, 16 percent; and with physicians, 13 percent.

In the Chicago Department of Welfare, the 7½ percent of time spent on miscellaneous and clinic duties appears as a minimum, in spite of the details incident to the control and administration of its large assistance program. The workers in the Cook County Bureau of Public Welfare appeared to spend a somewhat high percentage of their time on miscellaneous duties (25 percent). They are responsible, however, for an extensive review of bills and authorizations, since medical care in this program is authorized in the recipients' grants instead of being paid directly to the person or institution furnishing these services, as in the Chicago Department of Welfare.

Who should take the initiative in requesting a consultation service was another question considered. In both agencies, case workers initiated the request most frequently, a fact which indicates that the need for consultation was recognized and sought by that group within the agencies closest to the clients' needs. The medical social workers in both agencies were the persons to suggest conferences with supervisors and with physicians. Analysis of this question in regard to conferences with outside agencies and other persons revealed that in the Chicago Department of Welfare the medical social workers took the initiative, while an outside agency or some other person usually was the one to request a conference with a medical social worker in the Cook County Bureau of Public Welfare.

Analysis of the time devoted to indirect or consultative services according to the number of services rendered indicated that medical social workers in the Chicago Department of Welfare gave some type of indirect service on the average of every three minutes to at least one client. The average in the Cook County Bureau of Public

Welfare was four minutes. Even though some of these services require only a fraction of a minute for their execution, the amount of time consumed by all the services of this type must limit the time that could be devoted to real consultant service in the accepted meaning of the term.

Analysis of services.—The medical social workers were asked to list and check on their schedules all the factors, or elements, which they touched upon in discussion or action. These factors, or elements, may be (1) the services which a medical social worker performs for a person needing medical care, (2) those separate bits of knowledge about the patient that must be known before suitable help can be given, or (3) those administrative or managerial services that must be rendered to facilitate the assistance needed for the ill person.

These factors were tabulated in five groups: Group A, illness and medical care; Group B, nonmedical resources used in social planning; Group C, components of family life and attitudes; Group D, material factors; and Group E, miscellaneous services discussed or performed. Group A includes those social factors which center most closely in illness and the arrangements incident to planning for such items as medical treatment, home care by a physician, home nursing, and special diets. Group B relates to nonmedical services used in social planning, such as employment agencies, special schools, and facilities for recreation. Group C relates to the components of family life and development and the attitudes and feelings toward all situations, and includes such factors as the patient's attitude toward his illness and other life situations, his family responsibilities, and his status in the family. Group D includes such factors as financial status, clothing, and appliances. Group E includes all managerial administrative or miscellaneous services, such as review of authorizations, review of bills, discussion of agency procedures, and interpretation of the medical program.

Table 170 presents a tabulation of the number and percentage of times the factors in groups A to E were discussed during consultations in the two agencies. Table 171 presents similar data in regard to interviews and miscellaneous services discussed or performed. The statistics in the tables show that the miscellaneous activities comprising Group E were discussed least frequently (only 54 times) in the recording of consultations and most often (898 times, or 90 percent of the total) in interviews. When, however, the miscellaneous activities in Group E are excluded, the emphasis in both tables falls on Group A.

TABLE 170. FREQUENCY AND PERCENTAGE OF FACTORS DISCUSSED DURING CONSULTATIONS IN COOK COUNTY BUREAU OF PUBLIC WELFARE AND IN CHICAGO DEPARTMENT OF WELFARE

| FACTORS INVOLVED | TOTAL FOR BOTH AGENCIES | | COOK COUNTY BUREAU OF PUBLIC WELFARE | | CHICAGO DEPARTMENT OF WELFARE | |
|--|--|-------------------------|--|-------------------------|--|-------------------------|
| | <i>Number of Times Discussed</i> | <i>Per- centage</i> | <i>Number of Times Discussed</i> | <i>Per- centage</i> | <i>Number of Times Discussed</i> | <i>Per- centage</i> |
| Group A | | | | | | |
| Illness and medical care | 722 | 69.3 | 465 | 73.3 | 257 | 63.0 |
| Group B | | | | | | |
| Nonmedical resources used in social plan- ning | 62 | 6.0 | 27 | 4.3 | 35 | 8.6 |
| Group C | | | | | | |
| Components of family life and attitudes | 120 | 11.5 | 63 | 9.9 | 57 | 14.0 |
| Group D | | | | | | |
| Material factors | 84 | 8.1 | 48 | 7.6 | 36 | 8.8 |
| Group E | | | | | | |
| Miscellaneous services discussed or performed | 54 | 5.1 | 31 | 4.9 | 23 | 5.6 |
| Total all groups | 1,042 | 100.0 | 634 | 100.0 | 408 | 100.0 |

This emphasis is to be expected, because of the nature of the consultants' activities and their relation to the medical needs of the client.

ADEQUACY OF SERVICE The major role of the medical social worker in public assistance programs which serve great numbers of persons is the giving of indirect service to the patient through consultation service to the case worker, who in turn deals directly with the patients. The study of the medical social consultants' activities showed that 76 percent of the workers' time in one agency was spent in consultation service, and 63 percent in the second agency, percentages which indicate that the workers were functioning satisfactorily in their consultant roles in point of time.

It was not possible to test the efficiency of the consultation service "as a dynamo that energizes the staff in the field of health."³³ The percentage of time spent on interviews appears to be somewhat high. Although direct interviews with patients, relatives, and others are properly the function of a medical social worker in a public assistance

³³ Jane Hoey, *The Significance of Medical Social Work in the Development and Administration of a Public Assistance Program*, Chicago, American Association of Medical Social Workers, 1940.

TABLE 171. FREQUENCY AND PERCENTAGE OF FACTORS DISCUSSED IN INTERVIEWS AND OF MISCELLANEOUS SERVICES PERFORMED BY COOK COUNTY BUREAU OF PUBLIC WELFARE AND BY CHICAGO DEPARTMENT OF WELFARE

| FACTORS DISCUSSED AND SERVICES PERFORMED | TOTAL FOR BOTH AGENCIES | | COOK COUNTY BUREAU OF PUBLIC WELFARE | | CHICAGO DEPARTMENT OF WELFARE | |
|--|--|-------------------------|--|-------------------------|--|-------------------------|
| | <i>Number of Times Discussed</i> | <i>Per- centage</i> | <i>Number of Times Discussed</i> | <i>Per- centage</i> | <i>Number of Times Discussed</i> | <i>Per- centage</i> |
| Group A | | | | | | |
| Illness and medical care | 48 | 4.8 | 41 | 5.1 | 7 | 3.6 |
| Group B | | | | | | |
| Nonmedical resources used in social plan- ning | 4 | 0.4 | 0 | ... | 4 | 2.1 |
| Group C | | | | | | |
| Components of family life and attitudes | 16 | 1.6 | 4 | 0.5 | 12 | 6.2 |
| Group D | | | | | | |
| Material factors | 32 | 3.2 | 24 | 3.0 | 8 | 4.1 |
| Group E | | | | | | |
| Miscellaneous services discussed or performed | 898 | 90.0 | 736 | 91.4 | 162 | 84.0 |
| Total all groups | 998 | 100.0 | 805 | 100.0 | 193 | 100.0 |

agency, usually this function should be kept to a minimum. The time considered necessary for this service might be considered in inverse ratio to the time given to the careful teaching-supervising type of consultation which is part of the medical care program.

Recording of consultations was at a minimum, especially in the case records in one agency. The brief recordings of medical facts, arrangements, and plans were well done. This paucity of recording is understandable, but nonetheless regrettable. Since good recording is done primarily for the purpose of improving the quality of service to the client and in a limited way to contribute to research and teaching, more time should be made available for this function.³⁴

No doubt a wealth of material relating to medical social work is available within the agencies for use in teaching and research. The medical social worker, in co-operation with the statistical and research department, could contribute greatly to her agency, as well as to the field of medical social work as a whole, by participating in such studies.

There is great value in the day-by-day teaching type of consultation

³⁴ American Association of Medical Social Workers, *Statement of Standards*.

service that the medical social worker is equipped to give. However, greater knowledge of the various social implications of illness may be gained if scheduled talks by physicians and medical social workers can be arranged for the case work staff. This knowledge stimulates the case worker to report illness or disease in a client, which might go unnoticed without this additional and authoritative awareness of the symptoms of disease.

Although the staff participates in greater or less degree in the planning of the total program within the agency and in participation in conferences and committees, the facts seem to warrant greater staff stimulation by the directors in this field.³⁵

The medical care programs in the agencies studied have been functioning for five and thirteen years, respectively. The time necessary to establish and integrate policies and procedures incident to a new program in a large metropolitan area may be said to have passed. Great improvements have been made in both programs, and one at least has been used as a pattern in other parts of the country. Medical social work in public assistance programs may be said to be still in the sifting and testing stage, and much research and study in this area continues to be necessary.

This brief study of these two agencies indicates that they are ready for the next step in development, which should make them productive in research and stimulate them to make contributions to the total field of medical care in public assistance programs.

RECOMMENDATIONS

It is recommended that:

1. Additional medical social workers shall be added to the staff of each agency, so that more time may be available to them for: (a) case recording; (b) rendering a teacher-leader type of consultant service; (c) participation in program planning; (d) research.

2. Special consideration shall be given to the recording of consultation services in order to clarify the contribution of the specialist to the total case work service and to afford material for teaching and research within the agency.

3. More clerical staff shall be added to the medical departments to free the medical social consultants from routine administrative activities.

4. Consideration shall be given in each agency to the improvement

³⁵ *Ibid.*

of personnel practices, with special reference to salaries, vacations, physical working conditions, and in the Chicago Department of Welfare a retirement plan.

5. The medical social consultants shall be encouraged to attend conferences, to participate in the work of professional committees and to do more professional reading.

THE CARE OF THE CHRONICALLY ILL

by *Edward T. Thompson, M.D.*

CHRONIC ILLNESS has been designated by the Surgeon General of the United States Public Health Service as the number one health problem of the nation. Unfortunately, the full import of the seriousness of the problem is not generally recognized. The urgency of the situation lies in the fact that the ratio of the number of chronic invalids to the able-bodied in the population is continually increasing. Through advances in medical science the span of human life is being steadily lengthened with the result that each year finds a larger proportion of the people living to ages when chronic diseases take a heavy toll.

In general, chronic diseases begin insidiously and progress slowly. With the passing of time the disabling effects of the disease gradually increase in severity until the patient becomes permanently incapacitated. All ages are affected, although the incidence of chronic illness is highest among the aged.

Almost invariably chronic disease brings in its train economic and social complications. During long-term illnesses financial resources may be rapidly dissipated. Even in families in comfortable circumstances under ordinary conditions, serious economic problems may arise when some member of the family becomes chronically ill. With the number of permanent invalids increasing every year, the problems of the chronically ill no longer can be considered as individual or family matters. They must be recognized as a community responsibility and must be dealt with in terms of prevention and rehabilitation as well as of adequate care.

Advances in medicine have contributed greatly toward the control of some chronic diseases, notably in diabetes and pernicious anemia, and future research holds the hope of alleviation and control of other forms. To this end the medical profession should devote more time to study and research in the cause and control of various forms of these diseases.

Adequate provision for the chronically ill is an essential part of any general community program of public health. In constructive planning for medical care in the Chicago-Cook County area this problem should be given major emphasis. Ways and means must be found to provide competent care for all persons suffering from long-term illnesses regardless of their age, sex, funds, race, or creed. The need in this area is urgent.

EXTENT OF CHRONIC ILLNESS IN CHICAGO AND COOK COUNTY

A comprehensive study of the prevalence of chronic illness among the population of Chicago and Cook County was beyond the scope of this survey. Sufficient information is available, however, from which the magnitude of the problem in this area may be determined with reasonable accuracy for purposes of practical planning. On the basis of the frequency of occurrence of chronic ill-health among specific age groups, as reported in the National Health Survey of 1935-37,¹ estimates of the number of persons disabled from chronic diseases have been derived separately for Chicago and for Cook County exclusive of Chicago. These estimates are given in Table 172. It will be noted from the table that in Cook County including Chicago it is estimated that approximately 758,000 persons are suffering from chronic diseases or permanent impairments which might keep the individual away from his work or usual pursuits or handicap him in these activities. Of this number, at least 49,000 are disabled for such long periods of time that they constitute an invalid population, although they are not necessarily helpless or bedridden. The term "chronically ill" refers to these permanently disabled persons, and it is with the problems of their care that this chapter deals.

Estimates for the city of Chicago alone indicate that 635,000 persons have some chronic disease or serious impairment and that by reason of these disorders approximately 41,000 of them are chronically ill. In Cook County exclusive of Chicago it is estimated that more than 123,000 persons are suffering from chronic diseases or permanent impairments, of whom about 8,000 are chronically ill.

Chronic diseases are not confined to any specific age group. They affect all ages, but place a heavy burden upon the productive years of life. In the Chicago-Cook County area 60 percent of the number esti-

¹ U. S. Public Health Service, Division of Public Health Methods, National Institute of Health, *The Magnitude of the Chronic Disease Problem in the United States, 1938* (Bulletin No. 6).

TABLE 172. ESTIMATED NUMBER OF PERSONS IN SPECIFIED AGE GROUPS
(1) WITH CHRONIC DISEASE OR PERMANENT IMPAIRMENT AND
(2) CHRONICALLY ILL^a

| AGE GROUPS (IN YEARS) | PERSONS WITH SOME CHRONIC DISEASE OR PERMANENT IMPAIRMENT | | CHRONICALLY ILL | |
|----------------------------------|---|------------|-----------------|------------|
| | Number | Percentage | Number | Percentage |
| Cook County including Chicago | 757,916 | | 49,066 | |
| Chicago | | | | |
| Under 5 | 7,289 | 1.1 | 405 | 1.0 |
| 5-14 | 31,207 | 4.9 | 1,416 | 3.4 |
| 15-24 | 48,145 | 7.6 | 2,613 | 6.4 |
| 25-34 | 99,060 | 15.6 | 3,485 | 8.5 |
| 35-44 | 123,217 | 19.4 | 5,798 | 14.1 |
| 45-54 | 133,068 | 21.0 | 7,641 | 18.7 |
| 55-64 | 97,242 | 15.3 | 7,852 | 19.2 |
| 65-74 | 67,644 | 10.7 | 7,748 | 18.9 |
| 75-84 | 23,877 | 3.8 | 3,380 | 8.3 |
| 85 and older | 3,477 | .6 | 613 | 1.5 |
| All ages | 634,226 | 100.0 | 40,951 | 100.0 |
| Cook County excluding Chicago | | | | |
| Under 5 | 1,510 | 1.2 | 84 | 1.0 |
| 5-14 | 6,888 | 5.6 | 313 | 3.9 |
| 15-24 | 9,301 | 7.5 | 505 | 6.2 |
| 25-34 | 17,645 | 14.3 | 621 | 7.6 |
| 35-44 | 24,298 | 19.6 | 1,143 | 14.1 |
| 45-54 | 25,401 | 20.5 | 1,459 | 18.0 |
| 55-64 | 18,834 | 15.2 | 1,521 | 18.7 |
| 65-74 | 13,455 | 10.9 | 1,541 | 19.0 |
| 75-84 | 5,550 | 4.5 | 786 | 9.7 |
| 85 and older | 808 | .7 | 142 | 1.8 |
| All ages | 123,690 | 100.0 | 8,115 | 100.0 |

^a Based on prevalence rates reported by National Health Survey for specific ages, 1935-37, as applied to Chicago and Cook County population, 1940.

mated to be permanently disabled from chronic diseases are between twenty-five and sixty-four years of age. Even in the young age groups the incidence of chronic invalidism is not negligible, but after the age of forty it increases markedly and shows a close relationship to the coming of old age. Since the elderly are constituting a larger and larger proportion of the general population, it is evident that the volume of chronic invalidism is year by year becoming greater.

The magnitude of this problem comes into clear focus when it is viewed against the progressive aging of the population. On the basis of estimates reported by the National Industrial Conference Board,²

² National Industrial Conference Board, *Economic Almanac for 1943-1944*.

it is expected that by 1980 the percentage of the population in the Chicago-Cook County area living to the age of sixty-five will be 12.3 percent, more than double the 5.8 percent calculated for 1940. The percentages projected for the end of each decade after 1940 and throughout 1980 for the United States as a whole and for the Chicago-Cook County area are as follows: U. S. A.: 1950, 7.9 percent; 1960, 10.2 percent; 1970, 11.9 percent; and 1980, 14.4 percent; Chicago-Cook County: 1950, 6.8 percent; 1960, 8.6 percent; 1970, 10.8 percent; and 1980, 12.3 percent.

For the city of Chicago it is possible to convert these percentage projections into estimates of the number of chronically ill persons to be expected among this older age group. The estimates for 1940 and the predicted estimates for the years 1950, 1960, and 1965 of the number of persons sixty-five years and older disabled from some form of chronic disease and the number of permanently disabled invalids (chronically ill) in these groups are given in Table 173. The table shows that by 1960 we may expect the population of Chicago to include 338,250 aged persons, of whom more than 20,000 will be chronic invalids. This is an increase of nearly 8,400 invalids in these

TABLE 173. ESTIMATES OF NUMBER OF CHICAGO PERSONS SIXTY-FIVE YEARS OF AGE AND OLDER IN POPULATION PROJECTIONS 1950-65
(1) WITH CHRONIC DISEASES OR PERMANENT IMPAIRMENTS AND
(2) CHRONICALLY ILL

| <i>Year</i> | <i>Population 65 Years and Over^a</i> | <i>Number with Some Chronic Disease or Permanent Impairment^c</i> | <i>Number Chronically Ill^c</i> |
|-------------|---|---|---|
| 1940 | 197,079 ^b | 94,998 | 11,741 |
| 1950 | 278,860 | 134,411 | 16,592 |
| 1960 | 338,250 | 163,037 | 20,126 |
| 1965 | 363,660 | 175,284 | 21,638 |

^a The percentage distribution of age groups sixty-five years and older as estimated for the United States (*Statistical Abstract of the U. S. A., 1944-1945*, p. 25) was applied to population projections for Chicago (The Chicago Plan Commission, 1944) to determine the population according to ages for specified years.

^b U. S. Bureau of the Census, 1940.

^c Based on prevalence rates reported by National Health Survey (1935-37) for persons sixty-five years and older as applied to Chicago population in 1940 and the projections to 1965.

older age groups during this twenty-year period. These predictions are based on the prevalence of chronic diseases and invalidism reported at the time of the National Health Survey (1935-37). They do not take into account the fact that in the future the incidence of these diseases may be raised or that advances may be made by medical science in their control and treatment.

The seriousness of the problem is further emphasized by the fact that the chief causes of death among the middle-aged and elderly are chronic diseases. A study of the mortality statistics for Chicago for the years 1940-44 (comparable data for Cook County exclusive of Chicago were not available for analysis at the time of this Survey) showed that of the 36,569 annual deaths during these years 25,526 were due to conditions ordinarily classified as chronic. The average number of deaths per year in various age groups from certain chronic diseases is given in Table 174. Statistics presented in the table indicate that approximately two out of every three deaths in Chicago during this five-year period occurred as a result of chronic illness in persons over forty years of age.

The number of chronically ill persons in the Chicago-Cook County area as here estimated includes patients who are suffering from all forms of diseases commonly classified as chronic. Among the 49,000 chronically ill there are 8,900 cases of mental and nervous diseases that are in the general population or have been hospitalized only recently, and at least 2,600 cases of tuberculosis that either are not in institutions or have been there for relatively short periods of time. Special facilities for the care of these two forms of chronic illness are considered separately in Chapters 28 and 26. If these facilities are used also to provide care for other chronically ill patients they will be reviewed in this chapter, but it is with the needs of the remaining 37,500 chronic invalids that this report is primarily concerned.

In the interest of these individual patients and of the general community it is important that the facilities for their care be expanded progressively to keep pace with the increasing numbers incapacitated by diseases and that the type of service provided be that which the patient's condition requires.

FACILITIES FOR THE CARE OF THE CHRONICALLY ILL

About a third of the chronically ill need some form of institutional care. The total number in the Chicago-Cook County area is estimated to be 12,500 persons. At the time of the Chicago-Cook County Health Survey the combined facilities for the care of these chronically ill patients, exclusive of facilities for persons with mental diseases or tuberculosis, consisted of 207 homes and institutions and a number of hospitals in which accommodations are made available to patients suffering from chronic diseases. Included in this number are thirty-nine homes for the aged which provide some care for chronically ill

TABLE 174. AVERAGE NUMBER OF DEATHS ANNUALLY FROM SPECIFIED CHRONIC DISEASES ACCORDING TO AGE,
CHICAGO, 1940-44*

| CAUSE OF DEATH | ALL AGES | AGE IN YEARS | | | | | |
|--------------------------|----------|--------------|-----|------|-------|--------|--------------|
| | | Under 1 | 1-4 | 5-19 | 20-39 | 40-59 | 60 and Older |
| Certain chronic diseases | 13,501 | 3 | 6 | 103 | 657 | 4,105 | 8,627 |
| Diseases of the heart | 5,409 | 1 | 15 | 36 | 290 | 2,087 | 2,980 |
| Cancer | 2,763 | 1 | 7 | 28 | 167 | 698 | 1,862 |
| Nephritis | 1,940 | 2 | 2 | 4 | 52 | 582 | 1,298 |
| Cerebral hemorrhage | 1,182 | .. | .. | 10 | 39 | 352 | 781 |
| Diabetes | 466 | 2 | .. | 3 | 49 | 239 | 173 |
| Cirrhosis of the liver | 265 | .. | .. | .. | 1 | 25 | 239 |
| Arteriosclerosis | 25,526 | 9 | 30 | 184 | 1,255 | 8,088 | 15,960 |
| Total | 36,569 | 1,779 | 390 | 817 | 3,340 | 11,290 | 18,953 |

* Data from unpublished records of Chicago Health Department.

patients. Institutional facilities which are operated solely for the chronically ill, convalescents, and the handicapped are summarized in Table 175 according to the controlling auspices, the type of patients served, and the bed capacity.

It will be noted from the table that the majority of the facilities are operated for profit as proprietary nursing homes and that most of them offer care to nonambulant patients. There are 143 proprietary homes, with a total bed capacity of 1,977, or an average of about 13 beds per home. Capacities of these homes vary from a few beds to over 100, the average of the 60 smallest being less than 10 beds per home.

Under the control of private voluntary agencies there are 21 homes, 16 of which are primarily for convalescents or handicapped persons. The total bed capacity of these nonprofit homes is 990 beds, with an average of 47 beds in each institution.

The four tax-supported institutions have a capacity of 1,453 beds, each institution providing care for a different type of patient—the ambulant chronically ill, the nonambulant, the convalescent, and the handicapped. These beds are exclusive of those in these institutions which are for the care of tuberculosis cases.

In the homes for the aged it is estimated that not more than 20 percent of their bed capacity is available to the chronically ill. Most of the homes for the aged refuse admission to an applicant who is sick or suffering from a chronic disease which is likely to incapacitate him, but many of them provide care for residents who become disabled after admission. Of the 5,692 beds in homes for the aged, including the Oak Forest Infirmary, it is estimated that about 1,300 are available for the care of the chronically ill. Homes for the aged in this area are, in general, maintained through the support of fraternal and religious groups. There is evidence of an increasing tendency for those in control of these institutions to recognize the importance of their part in a community plan for adequate care for the chronically ill, and it is confidently expected that in the future these homes will assume a greater share in the responsibility for the care of chronic patients.

No information was gathered from hospitals regarding the number of beds allotted to patients having chronic diseases. On the basis of findings from surveys in other communities, it is estimated that at the time of this review at least 10 percent of the beds in general and special hospitals were occupied by chronically ill patients. It is not

TABLE 175. TYPE AND NUMBER OF AGENCIES PROVIDING CARE FOR THE CHRONICALLY ILL, CONVALESCENT, AND HANDICAPPED AND THEIR BED CAPACITIES, CHICAGO AND COOK COUNTY^a

| NUMBER OF AGENCIES PROVIDING CARE FOR SPECIFIED TYPES OF PATIENTS | | | | | | | |
|---|-------|-----------------|----------------|--|--------------|-------------|--------------------|
| CONTROLLING AUSPICES AND LOCATION | TOTAL | CHRONICALLY ILL | | | Convalescent | Handicapped | NUMBER OF BEDS |
| | | Ambulant | Other | | | | |
| Chicago and Cook County | | | | | | | |
| Government institutions | 4 | 1 | 1 | | 1 | 1 | 1,453 |
| Nonprofit homes | 21 | 2 | 3 | | 7 | 9 | 990 |
| Proprietary homes | 143 | 52 | 85 | | ... | 6 | 1,977 |
| Total | 168 | 55 | 89 | | 8 | 16 | 4,420 |
| Chicago | | | | | | | |
| Government institutions | 3 | 1 | ... | | 1 | 1 | 354 |
| Nonprofit homes | 18 | 2 | 3 | | 5 | 8 | 900 |
| Proprietary homes | 116 | 51 | 61 | | ... | 4 | 1,462 |
| Total | 137 | 54 | 64 | | 6 | 13 | 2,716 |
| Cook County excluding Chicago | | | | | | | |
| Government institutions | 1 | ... | 1 ^b | | ... | ... | 1,099 ^b |
| Nonprofit homes | 3 | ... | ... | | 2 | 1 | 90 |
| Proprietary homes | 27 | 1 | 24 | | ... | 2 | 515 |
| Total | 31 | 1 | 25 | | 2 | 3 | 1,704 |

^a Exclusive of institutions for patients with mental diseases and tuberculosis and thirty-nine homes for the aged having a total capacity of 5,692 beds, of which 1,296 are available for the chronically ill.

^b Oak Forest Infirmary, section for the chronically ill.

unlikely that this ratio may be as high as 14 percent. The hospital survey conducted by the United Hospital Fund in the New York metropolitan area (1935-36)³ found 14 percent of the total beds in voluntary and government hospitals were available for chronic patients. Estimates based on the 10 percent ratio indicate that there is provision in hospitals in Cook County for the care of approximately 1,350 patients with chronic diseases, excluding the tuberculosis cases.

Under the present conditions in the Chicago-Cook County area the combined facilities of special institutions, nursing and boarding homes, and hospitals can provide care for 7,060 chronically ill persons—1,453 beds in government institutions, 990 in nonprofit homes, 1,977 in proprietary homes, 1,297 in homes for the aged, and 1,343 in general and special hospitals.

FACILITIES FOR CHRONICALLY ILL NEGROES Among the 12,500 chronic invalids in the Chicago-Cook County area who require care away from their homes, it is estimated that at least 1,200 are Negroes. At the time of the survey, facilities in actual use for the chronically ill Negroes consisted of a total of 352 beds scattered through 8 proprietary nursing homes, 2 homes for the aged, and the Oak Forest Infirmary. The census of the infirmary on the day of visitation showed 15 percent of the residents were Negroes, an indication that approximately 165 beds for the chronically ill in this institution were occupied by Negroes. The remaining 187 available beds were all located in the city of Chicago and were distributed as follows: 178 in proprietary nursing homes, and 9 in homes for the aged.

OAK FOREST INFIRMARY As the Oak Forest Infirmary is the largest "home" in the Chicago-Cook County area it merits special attention in this survey of facilities. The infirmary was established in 1910 as a county poor farm, but through the years it has gradually undergone a change of function, and today it operates mainly as a home for the chronically ill. It has a bed capacity of 3,145, of which 1,099 beds are in the chronic disease hospital section, 576 beds in the tuberculosis hospital section, and 1,470 beds in the wards designed for domiciliary care only.

The chronic disease section operates at full capacity at all times, and as of July 1, 1946, it had a waiting list of 83. The occupancy rate in the tuberculosis division is generally around 50 percent, the

³ The United Hospital Fund of New York, *Hospital Survey for New York*, New York, 1937, II, 657.

census on July 15, 1946, being 252. In the general section on this date there were 1,043 residents, an occupancy rate of 71 percent.

Conditions under which the chronically ill patients are cared for are not satisfactory. The wards are large and greatly overcrowded, many of them failing to provide enough space around the beds for freedom of movement. Facilities for the patients' personal belongings are conspicuously absent. From a physical standpoint the buildings are generally well maintained, with the exception of insufficient and unsatisfactory arrangements for the removal of bed patients in case of fire. Painting of the institution was in process at the time of visitation. From even casual observation it was evident that the standard of housekeeping left much to be desired. Flies were prevalent, particularly in the butcher shop, the kitchen, and the dining room. Food did not appear appetizing, and the serving of it was poor. For example, bread to be eaten at the evening meal was already on the patients' trays and uncovered at 3 P.M.

Lack of trained help was everywhere apparent. On the day of visitation the woeful shortage of professional personnel—both medical and nursing—was particularly impressive. Chronically ill patients require a large amount of personal care. Many can neither feed themselves nor take care of their bodily needs. According to reports it has been frequently necessary to assign ambulatory patients to assist the bedridden. Such care is inefficient, insufficient, and often harmful.

Seven resident physicians are employed by the institution for the daily care of the patients. This number is equivalent to an average of two hundred patients for each physician, a patient load beyond both his professional ability and the time permitted. Consulting physicians are available for weekly consultations except in one or two medical specialties.

The shortage of graduate nurses in the institution is critical. In the tuberculosis section at the time of the survey there were 8 graduate nurses, 4 of them acting as supervisors. This permits less than 3 graduate nurses for each eight-hour shift and provides 1 professional nurse for the care of 84 patients. In the infirmary hospital section there were 14 graduate nurses, 9 of whom served as supervisors. During each eight-hour shift, therefore, there were less than 5 professional nurses on duty, or 1 graduate nurse to 220 patients.

The nursing staff was augmented by 114 nonprofessional nurses' aides. Of this number, 33 were assigned to the tuberculosis section,

an average of 1 aide to assist in the care of 7.6 patients. The remaining 81 served in the infirmary section, an average of 1 nurses' aide to 13 patients.

Shortage of personnel was not due to insufficient funds. The institution reports funds available to employ at least 45 additional nurses and much more nonprofessional help. The total budget, however, is still small. Even if all the positions were filled, the number of employees would be insufficient to render the care necessary to meet the requirements of an approved, well-managed institution.

The infirmary is provisionally approved by the American College of Surgeons. It is also on the register of the American Medical Association, but has not been approved for either intern or residency training. It has not been approved by the Illinois Public Aid Commission for the care of the dependent chronically ill. Raising standards to warrant these approvals would certainly result in better care of the patients, and at the same time would permit training for interns and residents and research in the field of geriatrics. Under present conditions only slight use is being made of the wealth of material available for research. In the course of a year approximately seventy-five medical undergraduates serve clerkships at the institution. The unique opportunity of the Oak Forest Infirmary for group studies, teaching, and training in geriatrics should be extended to medical students—both undergraduates and graduates—through affiliation of the institution with medical schools and through further expansion of staff privileges.

The present salary scale compares very favorably with scales elsewhere, but the location of the institution is not attractive to prospective employees. They feel that they will be too far away from Chicago activities. The lack of approval by the national professional associations also militates against obtaining professional help. A further deterrent is the fact that the nature of the cases hospitalized does not appeal to many persons—professional and nonprofessional. Association with chronic invalids is depressing to many people, and since employment in more desirable institutions is easily obtainable applicants for work in the infirmary are few.

THE NEED FOR BEDS FOR THE CHRONICALLY ILL

To meet the needs of the chronically ill in the Chicago-Cook County area this survey of existing facilities has shown that about 7,060 beds

are available. On the assumption that approximately a third of the 37,500 chronic invalids in this area, or 12,500 persons, require some form of institutional care, it is evident that there is at this time a deficiency of 5,500 beds.

This estimate is considered very conservative. If the needs were determined on the basis of 3.3 beds per 1,000 population, which is the rate recently established by the Wilder Charities⁴ of St. Paul, Minnesota, as the minimum for the care of the chronically ill, the estimated number of beds required for this area would be raised to 13,409. The deficiency of beds would thus be increased by 1,500 to a total of 7,000 beds. The 1947 report of the Hospital Council of Greater New York establishes a rate of 3 beds per 1,000 population for the chronically ill. A similar study made in Cleveland in 1944 established a ratio of 4 beds per thousand.⁵

In addition to the beds needed to care for the chronically ill, at least 3,500 beds are required for the mentally ill, exclusive of those already in institutions. According to the prevalence rates for disabling nervous and mental diseases reported in the National Health Survey, it is estimated that there are at least 8,900 mentally ill persons in this area who are in the general population and not yet hospitalized or who have only recently entered an institution. Of this number approximately half, or 4,450 cases, are assumed to need institutional care. The need for beds for these patients was not considered in the estimate of additional beds required in mental institutions discussed in Chapter 28. The combined facilities of the community, exclusive of the overcrowded tax-supported institutions, can provide for less than 800 patients. These available beds are distributed as follows: 274 in nonprofit and proprietary homes and about 520 in general hospitals.

The requirement for tuberculosis beds would be 4,915. This figure is based upon the National Tuberculosis Association figures of 2.5 beds per death and gross deaths of 1,966 from tuberculosis for Chicago and Cook County in 1944. The following beds for tuberculosis are now available: in local government hospitals, 2,259; in Federal Government hospitals, 294; in voluntary hospitals, 87. These available beds total 2,640, or 2,275 beds less than the 4,915 needed.

⁴ Allen Stone, *Problems of Chronically Ill Patients*, St. Paul, Minnesota, 1945.

⁵ Mary C. Jarrett, *Care of the Chronically Ill of Cleveland and Cuyahoga County*, Cleveland, Ohio, Benjamin Rose Institute, 1944.

The deficiency of beds for the care of chronically ill adults and children, exclusive of tuberculous and mentally ill patients already hospitalized, is estimated to be at least 12,000 beds.

Although the potential demand for beds for the chronically ill among the Negroes is included in the estimated over-all need, the serious shortage of facilities for the Negro under existing admitting policies of some institutions should be recognized. At the time of the survey only 352 beds were available for the 1,200 chronically ill Negroes requiring care outside their homes, which is less than a third of the estimated number needed for them.

QUALITY OF THE FACILITIES AND THEIR SERVICES

Quality of service is so intangible that without a detailed investigation of each home it cannot be adequately appraised. As time and personnel did not permit such inspection, appraisal of the facilities and their services for the chronically ill has been based on general interpretation of the physical conditions and specific acts of commission and of omission as observed by the Chicago-Cook County Health Survey representatives or as reported to them.

The type of facility providing the service is in too many instances not suitable for the care of the chronically ill. Many of the proprietary homes have been converted from family dwellings into small nursing homes. Of the 143 proprietary homes, sixty have an average capacity of less than ten beds. Many of the homes lack adequate plumbing, have no isolation facilities, and present dangerous fire hazards, due to the absence of adequate egress for bed patients. Many of them are unable to meet the requirements specified by the Municipal Building Code of Chicago, the Board of Health, and/or the Chicago Fire Department. At the time of the survey only nineteen of the proprietary homes were licensed to operate as nursing homes. The others continue to function despite their inadequacies. Their failure to qualify for licensure, however, is not always due to deficiencies in the homes. Not infrequently it is the result of ambiguities and inadequacies in the municipal codes.

Overcrowding is common in all the homes, a condition which works to the detriment of the quality of the service rendered. Reports submitted to the survey indicate that the homes operate at maximum capacity at all times and that some have waiting lists so long that a delay of months is usual.

Lack of personnel, both trained and untrained, has also affected the quality of care adversely and is seriously retarding any efforts toward an improvement in the services offered. Figures show that a number of homes have been forced to discontinue operation because of their inability to obtain sufficient trained personnel to serve the essential needs of their residents.

From the professional viewpoint, the medical care programs of the various homes and institutions leave much to be desired. Resident physicians are employed by 7. Attending physicians visit regularly in 42 institutions and are on call when medical service is needed in 125 others. No information regarding the frequency of visits by a physician was obtained from the remaining homes. Of the homes having an attending physician, 14 report daily visits, 2, three visits a week, 1, two visits a week, 14, a weekly visit, and the remaining 11, visits at longer intervals.

Occupational therapy and physiotherapy are generally not provided by the institutions, and little, if any, effort is made to restore impaired function. With rare exceptions, these homes and institutions have no arrangements for keeping the residents active and interested in their daily life. Entertainment is almost entirely limited to social intercourse and the radio.

STANDARDS AND LICENSURE

The findings of this survey have indicated clearly the urgent need in the Chicago-Cook County area for raising the standards of care for the chronically ill. The community is not unaware of the situation and has made some material advances toward the promotion of good facilities. Through the co-operation of the Council of Social Agencies of Chicago and the Community Fund of Chicago an agency was established in 1944 for the specific purpose of fostering adequate care for the chronically ill. Since its organization this agency, known as the Central Service for the Chronically Ill of the Institute of Medicine of Chicago has directed its efforts toward an appraisal of existing facilities and the development of standard-setting materials. Long-range problems cannot be solved in a few months, but definite progress is being made by the agency. Through its educational activities with the general public and with various professional groups and its special educational programs for operators and prospective operators of nursing homes, the agency is disseminating prac-

tical information and stimulating effective community planning for the care of the chronically ill. The work of this agency should be commended and heartily supported by the community.

No formulation of criteria for the proper care of the chronically ill in nursing homes and other institutions exists at the present time. At the request of the Illinois State Legislative Commission on the Care of Chronically Ill Persons a specific statement of standards is now being prepared by a joint committee which includes representatives of hospital organizations, the medical profession, and the Central Service for the Chronically Ill.

A further approach to the problem in this area has been through licensure, but thus far the results have been unsatisfactory. Illinois has a law which requires licensure of homes providing care for the chronically ill and places the responsibility for inspection on the Illinois Department of Public Health. The procedures prescribed by the statute seem to be satisfactory, but the law applies only within a limited area in Cook County, due to the fact that communities having their own licensing ordinances are permitted to operate under their individual ordinances. In Chicago, Evanston, and some smaller municipalities in Cook County licensure is administered according to the special legal requirements of these communities. Results in the Chicago area show a needlessly complicated and an exceedingly confused situation.

Nursing homes operated within the city limits of Chicago are subject to municipal licensure under ordinances adopted by the Chicago City Council. Before a license can be obtained, inspection must satisfy the requirements of the Chicago Health Department, the Department of Buildings, the Chicago Fire Department, and the Department of Streets and Electricity. Citations of the specific requirements for licensure are scattered through twelve different chapters of the Municipal Code of Chicago.⁶ It is consequently often difficult to ascertain the exact requisites. The situation is further confused by the lack of co-ordination among the several departments in formulating and enforcing their requirements. Since procedures for qualifying for a license are so numerous and involved, the home operators frequently find that they are unable to interpret them, to say nothing of meeting the requirements.

Confusion in interpretation of municipal requirements is a major

⁶ For example, requirements are given in Chapters 8, 40, 43, 47, 48, 49, 66, 67, 81, 90, 101, and 136.

stumbling block in the way of improving the existing facilities for the care of the chronically ill in Chicago. When events focus unfavorable public attention upon nursing homes and institutions, those that have applied for licenses and have made an earnest attempt to comply with all requirements have to bear the brunt of the charges. Under the present conditions, such criticisms against the licensed homes are obviously unfair. A genuinely co-operative attitude on the part of the licensing and inspecting authorities in assisting home operators to interpret the complicated requirements would be a significant step toward improving the situation. As long as confusion in the licensing procedures and conflicts between departmental requirements continue, however, little hope for real improvement of conditions can be expected in Chicago.

In recent years the concentration of attention by both medical and lay groups upon the problems of the chronic invalid has served to emphasize the need for higher standards of care and facilities. Licensure through a state agency has been considered a likely means of attaining these objectives, and in this area efforts have been made to establish a comprehensive state licensure law. Continued and continuous activity in this direction is advocated, but it will not provide the whole answer.

ECONOMIC ASPECTS OF THE PROBLEM

Under the economic conditions existing in 1946 it is estimated that one third of the chronic invalids residing in the Chicago-Cook County area are in need of financial assistance in meeting part or all the cost of their care. The chronically ill who can meet the full cost are limited in the purchase of services solely by the availability of facilities. Those who can pay only a part of the cost have the additional problem of financial resources. These patients include persons who have some funds of their own and persons who receive financial assistance from relatives or friends and in addition require some help from private charity or public assistance. Invalids who can contribute nothing at all from their own or family resources toward the cost of care are usually provided for in government institutions or through public assistance payments, which are then used to pay for care in the patient's own home or in a proprietary nursing home.

The chronically ill who are recipients of public assistance grants to the blind, the aged, and dependent children may obtain care in any suitable institution, public or private, under the provisions of

the Illinois Public Aid Commission. Provision for medical care for persons on the relief rolls in Chicago and Cicero is the responsibility of the relief authorities in these communities. For other invalids in Chicago and Cicero who are medically indigent, but who are not eligible for the specified types of public assistance, the responsibility rests upon the Cook County authorities, who make arrangements for their care in the Cook County Hospital or the Oak Forest Infirmary. These residents of Chicago and Cicero cannot be cared for at public expense in other institutions or nursing homes. Since the Oak Forest Infirmary is occupied to capacity and has a long waiting list and a slow rate of turnover, a large group of the medically indigent chronically ill must depend upon private charitable agencies and hospitals or upon relatives and friends for any care they may secure.

Payment by public agencies to institutions providing care for the chronically ill is set at such a low level that a high quality of care cannot be furnished for the amount received. Theoretically, the public agencies increased the per-capita payments in 1945 from \$40 to \$60 a month, but only recently has any change been effected, and in general practice services are still paid for at the lower rate. Too frequently this low allowance has set the standard for the services offered by the institutions.

There is considerable variation in the amounts charged for care by the different homes and institutions. In 23 homes either service is provided without charge or the fee is adjusted to the patient's ability to pay for the service. Comparable information was not obtained from all of the 207 nursing homes and institutions, but the large majority of them operate on a more or less definitely established monthly rate. At the time of this survey the range in these monthly rates was from less than \$40 to more than \$200. These figures represent the minimal rates charged patients requiring the least expensive service. A distribution of the charges reported by 166 of the homes and institutions is shown in Table 176. It will be observed from the table that in most of the homes the charge for care did not exceed \$100 per month and in one fourth it was not more than \$60 a month.

In many instances the fees charged patients are not determined by the actual cost of the service. Many home managers, not knowing their operating costs, base their charges upon the patient's ability to pay. When the income received is inadequate to meet costs, the quality of the care is correspondingly reduced.

In addition to the homes and institutions which furnish service on

TABLE 176. MINIMAL MONTHLY CHARGES PER PATIENT REPORTED BY
166 HOMES AND INSTITUTIONS FOR CARE OF CHRONICALLY ILL,
COOK COUNTY AREA, 1946

| <i>Minimal Monthly Charges</i> | <i>Number of Homes</i> |
|--------------------------------|------------------------|
| \$40 or less | 11 |
| 41-60 | 31 |
| 61-75 | 27 |
| 76-100 | 28 |
| 101-125 | 26 |
| 126-150 | 10 |
| 151-200 | 28 |
| Over 200 | 5 |
| Total | 166 |

a monthly basis, a number have a lump-sum admission charge. These are homes for the aged in which the management agrees to provide care for as long as the person lives. Some of these homes have no definite fee, but require that accepted applicants sign over all their financial assets to the institution. The lump-sum payments reported by twenty of the homes for the aged are summarized in Table 177.

TABLE 177. LUMP-SUM PAYMENTS REQUIRED AS ADMISSION FEES BY
TWENTY HOMES FOR THE AGED, COOK COUNTY AREA, 1946

| <i>Admission Charge</i> | <i>Number of Homes</i> |
|-------------------------------|------------------------|
| \$ 500 or less | 8 |
| 500 plus any financial assets | 2 |
| 1,000 | 8 |
| 1,500 | 1 |
| 5,000 | 1 |
| Total | 20 |

Future planning for the chronically ill in the Chicago-Cook County area must provide opportunities for adequate care for an increasing number of chronic sufferers. The community must accept the responsibility for care at public expense of those who are medically indigent by making full use of its combined resources of voluntary, proprietary, and government agencies. More than half of all chronic invalids in the area are able to pay for the services they require. Increased bed capacity in the voluntary or in the proprietary institutions should be made available for them. Those financially unable to pay should be entitled to care in government institutions or in other institutions at government expense. Adherence to such a policy would help to maintain an even occupancy level in all institutions and homes at all times. Overcrowding in times of prosperity of the voluntary and proprietary facilities and low occupancy of

government institutions, with the reverse in time of depression, could thereby be avoided.

HOME CARE FOR THE CHRONICALLY ILL

With the necessary assistance, many chronic invalids could remain in their homes and be given adequate care. It has been estimated that 45 percent of the chronically ill who have not been institutionalized are living at home either alone or with spouse or parents, 40 percent are living with their children, and the remaining 15 percent reside in rooming houses, boarding homes, or hotels.

Regular medical care and nursing service are required for these patients. Some patients will need constant service in their homes, others, who are ambulatory, may require only occasional home care. Various organizations with field nurses render some service to chronic invalids if such persons reside in homes where these organizations happen to function, but the main nursing load in this area is carried by the Visiting Nurse Association of Chicago. This agency reports that its case load of chronic patients is at present so heavy that it has been found necessary to reduce the number of visits permitted to each invalid in order to spread the service more widely over the field. In 1945 approximately 75,000 home visits to chronic patients were made by the nurses of this agency, about 30 percent of the total number of home visits made by its nursing staff. The agency reports that it can meet neither the requests for care nor the tremendous need for home nursing service to the chronically ill.

Housekeeping and nutritional services, occupational and physical therapy, and other adjuncts to care for chronic invalids in their homes are practically nonexistent in the Chicago-Cook County area. Extension of visiting nurse, housekeeping, and other services must be depended upon as the most effective means of providing satisfactory care for the large number of chronic invalids who live in their own homes or are single boarders. Such services, particularly if associated with clinics or outpatient departments, will reduce materially the demand for institutional care.

The development of housing facilities for families with chronic invalids on the outlying borders of medical-center areas, such as is contemplated in connection with the proposed Illinois State Medical Center, will make clinic services easily available and within the reach of the ambulatory chronically ill. The increase of facilities for custodial care of chronic invalids, while necessary and desirable, should

not be considered as a replacement of home care, but only as supplementary to it.

REHABILITATION

In any program for the care of the chronically ill, consideration should be given to rehabilitation because of the contribution it can make toward improving the patient's condition. Rehabilitation refers to restoration of the handicapped to the fullest physical, mental, social, vocational, and economic usefulness of which such persons are capable. As a connecting link between medical care and the return of the patient to economic self-sufficiency, it presents a tremendous challenge to the community and to all interested agencies. It is a fertile and almost untouched field in Chicago and Cook County. No rehabilitation center, with workshops and similar types of equipment, has been established in this area as has been done in a number of other cities, notably in Milwaukee, Cleveland, Boston, New York, and Hartford, Conn. A few sporadic attempts have been made by some agencies in the area, such as the Goodwill Industries. These, however, reach a very limited number of the large group of disabled persons who should have such an opportunity.

The Division of Vocational Rehabilitation of the Illinois Board for Vocational Education, in joint participation with the Federal Government through the Office of Vocational Rehabilitation of the Federal Security Agency, is at present functioning in this area with major emphasis upon vocational advice and counseling. No artificial or "made" work enters into this program. Employment is obtained in private business and industry and in government positions on the customary business basis. Training is provided in public and private schools through vocational courses and actual training on the job. The disabled person is not required to pay fees or to contribute toward the cost of vocational guidance, counseling, psychological tests, and placement, or for medical examination. For all other services, including medical and surgical services or hospital care, the client is expected to pay in so far as his financial resources will permit. To be acceptable, cases must be shown by medical examination to be remediable and relatively stable. Although the Federal rehabilitation program calls for "early location of persons in need of rehabilitation to prevent effects of idleness and hopelessness," the local state office has not yet provided case-finding facilities whereby the initiative can be taken in discovering persons eligible for the service.

Preliminary steps for the establishment of a rehabilitation center modeled after those in Milwaukee and Cleveland have been taken by the Committee for the Handicapped of the Council of Social Agencies of Chicago. Efforts will be centered upon providing prompt and competent treatment and the early return of disabled individuals to gainful employment. The plan calls for the establishment of curative, adjustment, and production workshops.

The place of industry in rehabilitation is more than one of sympathetic understanding. Its role should include active co-operation and participation, for it is to industry that the chronic invalid must look for "on the job training" and for placement commensurate with his ability to perform, as Chapter 32 brings out.

During the war the demands of the armed forces for manpower forced industry to employ persons with some form of physical handicap. Sufficient data from this experience have been gathered to demonstrate that such a procedure is advantageous as well as entirely practicable. Indeed, some employers have found that the work turned out by handicapped personnel is in many instances of such superior quality as to justify a definite employment policy in placing partially disabled applicants whenever possible. The proportion of the handicapped who cannot be utilized or rehabilitated for employment is relatively small.

Chicago and Cook County comprise a great industrial center. Certainly in this area it is in the interest of the public that the employable among the physically handicapped be utilized to the fullest possible extent. Industry and society as a whole should realize that it is far more economical to rehabilitate and utilize a physically handicapped person than to support him in idleness.

RESEARCH AND TEACHING

Although it is an accepted scientific fact that much of the prevalent chronic illness could have been prevented by early diagnosis and treatment, yet needless invalidism is allowed to continue because of the lack of adequate diagnostic and therapeutic facilities. How many disabled persons could have been saved from chronic invalidism is not known and cannot be estimated. Unquestionably from the economic standpoint alone a heavy burden is imposed upon the community by this failure to provide preventive facilities.

With the exception of a minimal amount of undergraduate medical teaching in the Oak Forest Infirmary, no advantage is taken of

the exceptional resources and opportunities for instruction and research in this area. Practically no utilization is made of opportunities for postgraduate or undergraduate study of the many invalids who are residents of institutions and homes for the chronically ill, and there is no program of clinical study or research in effect at any of these facilities. In view of the increasing public concern regarding the problems of the chronically ill, the medical and civic authorities should recognize their responsibilities for initiating and encouraging extensive research and study in the fields of geriatrics and of the various chronic diseases.

SUMMARY

The findings of this survey have indicated that chronic illness is one of the major problems confronting the private, voluntary, and public health and welfare authorities in the Chicago-Cook County area, and that the problem is continuous and expanding. In future planning for the chronically ill special consideration should be given to provision for different types of care according to the medical needs of the patient. These should include facilities associated with medical centers where services are available for diagnosis and therapy and research in chronic diseases may be carried on; facilities where care can be furnished to patients who do not need diagnosis or therapy but do require personal attention and nursing service with a small amount of medical care, including supervision and periodic re-examinations by competent physicians; and facilities which provide for rehabilitation.

The recommendations presented will lay the foundation for a comprehensive program for adequate care for the chronically ill.

RECOMMENDATIONS

It is recommended that:

1. Twelve thousand additional beds shall be provided for chronically ill patients, to be distributed as follows: (a) for chronic invalids 5,500 beds; (b) for the mentally ill who have not entered institutions, 3,500 beds (for institutional requirements see Chapter 28); (c) for tuberculous patients, 3,000 beds (see Chapter 26).⁷

2. Four thousand five hundred of the beds for the chronic invalids shall be secured by general expansion of facilities: (a) in nursing homes; (b) by converting the Oak Forest Infirmary into an in-

⁷ This figure allows for replacement of about eight hundred obsolescent existing beds.

stitution for chronic invalids, with the exception of the section to be reserved for a general hospital unit; (c) by encouraging increased provision for the chronically ill in homes for the aged.

3. Beds for chronic diseases totaling approximately one thousand shall be established as units in connection with modern hospitals; these hospital units to be affiliated with medical schools where both research and teaching in chronic diseases may be emphasized, or near and associated with hospital centers.

4. Beds for children with chronic diseases totaling approximately 125 shall be established as units in connection with modern hospitals either as a part of a unit for the chronically ill adult or as a separate unit for children; these hospital units should be affiliated with medical schools where both research and teaching in chronic diseases may be emphasized or near and associated with hospital centers.

5. A section of the Oak Forest Infirmary shall be converted into a branch general hospital unit of Cook County Hospital to provide service for the southern section of Cook County (see recommendations in Chapter 46).

6. The Board of Commissioners of Cook County shall be urged to take the steps necessary to obtain full approval for the Oak Forest Infirmary by the American Medical Association and the American College of Surgeons; and this infirmary then shall be utilized to the maximum extent for both undergraduate and postgraduate medical education; furthermore, a program for clinical research in chronic diseases shall be developed at the infirmary.

7. A thorough integration of the administrative functions and the medical service and organization of the Cook County Hospital and the Oak Forest Infirmary shall be achieved under the auspices of the proposed hospital commission.

8. Immediate steps shall be taken by the Oak Forest Infirmary to conform to the fullest extent to the building and fire protection requirements.

9. Institutions for the care of chronic invalids shall provide recreational, occupational, and physical therapy facilities for their patients with emphasis upon the restoration of normal function.

10. A comprehensive rehabilitation center, with workshops and other appropriate equipment, shall be provided in affiliation with existing medical centers.

11. General hospitals shall be encouraged to accept chronically ill patients for diagnostic and therapeutic care.

12. Existing homes for the aged offering accommodations for chronic invalids shall co-operate with teaching institutions to the end that full use can be made of all teaching and research materials available in these homes.

13. The medical profession in collaboration with the Central Service for the Chronically Ill shall give consideration to a broader study of the needs of the chronically ill, and the Central Service for the Chronically Ill shall continue with increased emphasis its institutes and seminars for operators of nursing homes.

14. The Illinois State Legislative Commission on the Care of Chronically Ill Persons shall: (a) be commended for its efforts on behalf of the chronically ill; (b) continue and extend its activities and investigations of chronic diseases; (c) secure the enactment of a uniform and comprehensive state licensure law to regulate institutions in the care of the chronically ill, the law to contain licensure provisions in lieu of local licensure, and to be administered by a state agency, preferably the Illinois Department of Public Health; (d) establish and set standards of care for chronic invalids in government and nongovernment homes and institutions.

15. Necessary legislative action shall be taken to make state aid for medical care available to residents of Cook County who are not on relief, but are medically indigent, on the same basis that such state aid is available to the residents of other counties in Illinois.

PROVISION FOR THE DIAGNOSIS AND TREATMENT OF CANCER

by *Edward T. Thompson, M.D.*

CANCER IS A GENERAL TERM for the disorderly growth of cells in the body which unless removed or completely destroyed will in most cases result in the death of the individual. It is one of the leading causes of death in the United States and is probably the disease most feared by the general public. In its advanced stages cancer is characterized by more intensive and painful suffering than any other chronic disease. Under these conditions there is a natural reluctance on the part of some individuals to visit a physician when suspicious symptoms appear.

Cancer may occur at any age, but is most common in persons over forty-five years of age. In view of the fact that a progressively increasing proportion of the population is living to these older ages, the number of individuals having cancer will continue to be large. This point was brought out in Chapter 23.

It is generally agreed that if present medical knowledge and techniques were fully used a third of the patients now developing cancer could be cured and returned to normal life. Early diagnosis and treatment is the major weapon with which the individual can defend himself against the disease. Through the organized efforts of private and official agencies, intensive educational programs are now carried on to make the public aware of the danger signals of the disease and of the importance of seeking competent medical advice when they appear. Education is a slow process, and the movement is still young, but the hope for control of cancer rests largely upon the public's understanding of the facts and the complete co-operation of the potential cancer patient with his physician.

INCIDENCE OF CANCER

The Chicago-Cook County area in 1945 had 7,036 deaths from can-

cer.¹ During the preceding four years (1941-44) the average number of deaths annually was 6,892, or 15 percent of the deaths from all causes in this area. Of these deaths from cancer 5,488² were of residents of Chicago, or 15 percent of the city's total deaths. In the county outside Chicago there were 1,404 deaths from cancer, or 17 percent of the total deaths among persons living in the county.

Estimates of morbidity from cancer, based on the accepted relation of three patients under treatment to every death occurring during the year, indicate that in 1945 there were 21,108 cancer patients in the Chicago-Cook County area. The annual number of cases under treatment during 1941-44, distributed according to place of residence, is estimated to have been 16,464 patients in Chicago and 4,212 in the other municipalities and in the rural areas in Cook County.

Provision for the treatment of approximately 21,000 individuals with cancer is the problem considered in this chapter.

CANCER CLINICS

The special cancer facilities in this area consist of eighteen clinics maintained by government agencies, nonprofit associations, and a corporation, and an additional small number of clinics owned and operated by individual physicians or groups of physicians for pecuniary profit. The latter have not been included in this survey. Most of the cancer facilities are located in Chicago—fifteen clinics in Chicago and three in Cook County outside Chicago.

Of the 18 clinics, 1 is under the control of the state, 1 under the county, 15 are operated under the auspices of church organizations or other nonprofit associations, and 1 is under a corporation. With 2 exceptions, these facilities are maintained as cancer services of hospitals, and their professional staffs are members of the regular hospital staffs. Two of the clinics are independent of and separate from any hospital.

Each of the cancer clinics is under the supervision and control of a qualified physician, who serves on either a paid or a voluntary basis. The physicians devote full time to the clinics in some instances and only part time in others.

Generally the clinics have no restrictions on the type of patients admitted. The majority of them accept patients by referral from phy-

¹ Statistics from Illinois Department of Public Health, Division of Cancer Control.

² Illinois Department of Public Health, *Review of Illinois Health Statistics, No. 1, 1941-1944*. Springfield, Ill.

sicians or from the other clinics and outpatient departments. A few clinics, however, maintain some eligibility restrictions. In the two clinics operated under government auspices admission is limited by residence and economic status of the patient. One clinic excludes Negroes, and one restricts its service to women.

Diagnostic services are provided by all the cancer clinics, and in two clinics the services are confined solely to diagnosis. One of these, the Cancer Prevention Clinic, is maintained as a well person's clinic and admits only women.

The American College of Surgeons, in 1930, formulated a set of minimum standards for the organization and operation of cancer clinics. Since that time it has maintained an interest in cancer and through its co-operation in an advisory capacity has contributed greatly to the improvement of the care of cancer patients. The majority of the cancer clinics in the Chicago-Cook County area are approved by the American College of Surgeons: 14 clinics are fully approved, 1 clinic is provisionally approved, and 3 are not approved.

Radium and X-ray therapy are offered by the 16 therapeutic clinics, and 13 of them also provide surgery. In all the cancer clinics a radiologist is available either on a full-time or a part-time basis. Radium is owned by 12 therapeutic clinics, the amounts varying from 60 mg. to 10,500 mg., and is rented by the 4 other clinics as needed.

Adequate laboratory facilities and equipment for electrosurgery, examination of body cavities, and biopsies are available in all the therapeutic clinics, with a few exceptions. Three clinics are not equipped for electrosurgery, and three others lack equipment for bronchoscopy and oesophogscopy.

Medical social workers are associated with eight of the cancer clinics on either full-time or part-time basis. Information was not obtained as to the availability of medical social service to all patients in these clinics or as to its specific objectives when rendered. It may be assumed, however, that the medical social worker shares in the responsibility for the follow-up of the patients. Most of the clinics in the area have some type of follow-up system—14 clinics report a follow-up of all cases admitted to the cancer clinic, and 1 clinic limits its follow-up to a selected group of patients. Various methods are utilized by the different clinics. These include letters and telephone calls to patients, their relatives, or their friends, personal visits, and contacts through family physicians or agencies.

Records are kept by the clinics, but the information is usually not

in form to permit detailed statistical analyses of the case load, although the majority of the clinics report the use of the record forms devised by the American College of Surgeons. It was not possible to obtain the total number of patients admitted to the cancer clinics during any specified period of time. Reports from eleven of the therapeutic clinics show 1,428 cases were under treatment or observation at the time of this survey (June, 1946). Although this information is incomplete, it clearly indicates that either the available cancer facilities are not being utilized fully, or they are not numerous enough or large enough to provide treatment for the estimated 21,000 cancer patients in the area.

Operating expenses of the cancer services are not kept separately from the total costs of the outpatient departments and of the hospitals with which these clinics are associated. Financial data was therefore not available for this survey.

HOSPITAL BEDS REQUIRED

In estimating the need for hospital care for cancer patients it is generally agreed that one bed is required for every ten deaths from cancer. This estimate assumes a thirty-day stay in the hospital for each patient who dies from cancer and a bed occupancy of 75 to 80 percent. On this basis, the Chicago-Cook County area should have available 690 hospital beds for cancer patients if all cancer patients are to receive the necessary care.

There are relatively few beds in the hospitals in this area definitely assigned to the care of cancer patients. Only sixty-three beds were reported to be allotted to the treatment of this condition (see Chapter 46). This number, no doubt, represents a very small part of the total number of beds used for the care of cancer, since it is customary for such patients to be admitted to general surgical services. Although information was not available on the number of beds which would be utilized, it is evident from reports submitted by the clinics that additional beds are required. Four clinics indicated that they encounter difficulties in obtaining beds for the active treatment of their cancer patients. One of these clinics stated that admissions for surgery are delayed from four to six weeks because of the lack of beds.

Serious consideration should be given to the establishment of a special cancer hospital in this area. Preferably, such a hospital should be operated in connection with a medical center, such as the University of Illinois Medical Center. Under a particularly interested

professional group with all the associated facilities of a medical center, the concentration of cancer patients undergoing active treatment would afford extensive opportunities for clinical and biological research in the field of cancer.

More beds are also needed in the area for the care of patients in the terminal stages of the disease. No data are at present available upon which to base an estimate of the number required or of the existing facilities now being utilized for these patients. These beds should not be in general hospitals.

CANCER-CONTROL PROGRAM

A special effort was made in this survey to determine the effectiveness of the present cancer-control program in the Chicago-Cook County area. Two specific phases of the program were carefully reviewed. These were concerned with the stage of the disease at the time the potential cancer patient reported to the clinic and the demand by the public for services at the Cancer Prevention Clinic.

In all the educational activities of the agencies interested in cancer control emphasis is being given to the fact that success of treatment depends in large measure upon the stage of the disease when treatment is started and to certain symptoms which the individual should recognize as danger signals. Whether or not patients are reporting for medical advice in the early stages of the disease has therefore been considered an indication of the effectiveness of the control program. Since symptoms are easily detected in cancer of the breast, uterus, lips, tongue, and larynx, cases under treatment for these types of cancer were selected for study. The records of 860 patients were analyzed regarding the stage of the condition at the time of admission to the clinic.

Table 178 suggests the amount of delay by these 860 patients in obtaining treatment for the disease. The stages of cancer on admission were classified as: early, moderately advanced, advanced, and far advanced. Comparative results indicate that less than one in every four of these cases was in the early stages of the disease at the time he reported to the clinic while approximately one in every three was in the far advanced stage.

There were 357 cases of cancer of the breast reported by nine clinics. Of these, 29.1 percent were admitted in the early stages, 36.2 percent in moderately advanced or advanced stages, and 34.7 percent in a far-advanced stage.

TABLE 178. DISTRIBUTION OF 860 CASES OF CERTAIN TYPES OF CANCER ACCORDING TO THE STAGE OF THE DISEASE ON ADMISSION TO A CANCER CLINIC, CHICAGO-COOK COUNTY AREA

| TYPE OF CANCER | TOTAL | PATIENTS HAVING SPECIFIED STAGE OF DISEASE ON ADMISSION | | | | | |
|-----------------|--------|---|------------|---------------------|------------|--------------|------------|
| | | EARLY | | MODERATELY ADVANCED | | FAR ADVANCED | |
| | Number | Number | Percentage | Number | Percentage | Number | Percentage |
| Breast | 357 | 104 | 29.1 | 94 | 26.4 | 35 | 9.8 |
| Uterus | 235 | 52 | 22.1 | 61 | 26.0 | 39 | 16.6 |
| Lips and tongue | 175 | 41 | 23.4 | 63 | 36.0 | 28 | 16.0 |
| Larynx | 93 | 12 | 12.9 | 17 | 18.3 | 43 | 46.2 |
| Total | 860 | 209 | 24.3 | 235 | 27.3 | 145 | 16.9 |
| | | | | | | 271 | 31.5 |

The next largest group were those with cancer of the uterus. Eight clinics reported 235 such cases. Of these, the disease was in the early stages in 22.1 percent of the cases, either moderately advanced or advanced in 42.6 percent, and was far advanced in 35.3 percent of the cases.

The findings from the other types of cancer were similar in that a relatively small proportion of these patients were in the early stages of the disease when admitted for treatment. The largest number of them were said to be either in a moderately advanced or an advanced stage of the disease at the time they were first seen at the clinic. There were 175 cases with cancer of the lips or tongue and 93 cases with cancer of the larynx reported by seven of the clinics. In only 19.8 percent of these cases was the cancer in the early stages.

In view of the fact that the symptoms for the types of cancer included in these analyses can be readily detected by the individual patient, it is apparent that the ratio of the cases in the far-advanced stages of the disease to those in the early stages when first admitted for treatment is still high. Reasons given by the directors of the clinics for the patients' delay in reporting for cancer services indicate that insufficient knowledge of the disease is a major factor. In the judgment of 16 of the 18 directors this was the primary cause for the delay. Fear was mentioned by 9 and indifference by 8 directors as other reasons why the patients had not sought medical advice earlier. Lack of funds was in no instance considered to be a contributing factor.

These findings are substantiated by statements from the therapeutic clinics with regard to their ability to accommodate cases applying for cancer services. With the exception of difficulties encountered when hospital beds are required, only one therapeutic clinic reported that it was not able to accommodate all applicants.

As previously mentioned, the Cancer Prevention Clinic maintains diagnostic services for so-called well persons. Its purposes are largely educational and research. The effectiveness of its program is evidenced by the public interest and demand for its services. At the time of this survey the clinic had a waiting list of 1,800 and reported a delay of four months before admission for services was possible. The general experience of this clinic demonstrates the public's willingness to co-operate in the early detection of cancer. It also emphasizes the importance of a complete physical examination as an instrument for detecting asymptomatic cancer and as a special chan-

nel through which advice on preventive and corrective measures may be effectively provided.

With an intensified public cancer-education program, this demand for diagnostic facilities will be increased. Consideration should therefore be given to an expansion of the present Cancer Prevention Clinic or to establishment of additional cancer detection clinics in this area. In the planning and operation of all such facilities the active co-operation and supervision of the Chicago Medical Society should be encouraged.

Further advances in the control of cancer in this area require a more intensive educational program for the community as a whole in order to bring a larger proportion of cancer patients to the clinics at an earlier stage of the disease and to create an awareness on the part of potential cancer cases of the importance of early detection and competent medical advice.

THE NEED FOR CANCER REGISTRIES

A cancer case registry is an effective means of encouraging the maintenance of good records and statistics and also of evaluating the cancer education program of both lay and professional groups. If cases were summarized from records in clinics and hospitals for the six years prior to the inauguration of the registry, a preliminary estimate of the number of five-year cures might be obtained. The inclusion of a cancer case registry under the supervision of a cancer division in the Chicago Health Department is advisable.

As a means of stimulating the extension of cancer education to the profession and encouraging the taking of biopsies, the establishment of a tumor tissue registry by the Chicago Health Department with the co-operation and aid of the Chicago Medical Society also is advocated. Some method should be devised to enable physicians to obtain free examination of specimens by competent pathologists in the proposed tissue registry.

The co-ordination of these proposed registries with the program of the Illinois Department of Public Health would increase their ultimate effectiveness.

RECOMMENDATIONS

It is recommended that:

1. A special cancer hospital with a capacity of 250 beds shall be established to provide diagnostic and therapeutic care for cancer

patients. These facilities could serve approximately 2,500 patients each year.

2. This cancer hospital shall be associated with a medical center such as the University of Illinois Medical Center.

3. The development of cancer clinics in general hospitals shall be continued, and their services shall be organized to conform with the minimum standards of the American College of Surgeons.

4. Facilities for the institutional care of cancer patients in terminal stages of the disease shall be increased.

5. The program of cancer prevention clinics shall be extended through either the expansion of present facilities or the establishment of additional clinics.

6. The cancer education program for the general public shall be intensified and extended in order to bring cancer patients to the physician at an earlier stage of the disease.

7. Cancer clinics shall be encouraged to maintain adequate records for statistical analyses of case load, results of treatment, and other pertinent information.

8. A Division of Cancer Control, with a chief trained in the public health aspects of cancer, shall be established in the Chicago Health Department.

9. The Chicago Medical Society shall appoint an advisory committee representing surgeons, radiologists, and pathologists, and pathologists experienced in cancer to advise the proposed Division of Cancer Control of the Chicago Health Department in regard to the professional and ethical aspects of the program.

10. A Cancer Case Registry and a Tumor Tissue Registry shall be established under the supervision of the proposed Division of Cancer Control of the Chicago Health Department, with the active aid and co-operation of the Chicago Medical Society.

11. The proposed Division of Cancer Control of the Chicago Health Department shall co-ordinate its cancer control program with that of the Illinois Department of Public Health.

APPENDICES

DISEASES REPORTABLE BY LAW IN THE STATE OF ILLINOIS

- | | |
|---|---|
| 1. Actinomycosis | 28. Leprosy |
| 2. Amediasis | 29. Lymphogranuloma venereum |
| 3. Ankylostomiasis (hookworm disease) | 30. Malaria |
| 4. Anthrax | 31. Measles |
| 5. Chancroid | 32. Meningococcal meningitis and meningococcemia |
| 6. Chickenpox | 33. Meningitis—other |
| 7. Cholera | 34. Mumps |
| 8. Conjunctivitis of the newborn | 35. Paratyphoid fever |
| 9. Conjunctivitis (infectious) over one month of age | 36. Plague |
| 10. Dengue | 37. Pneumonia |
| 11. Diarrhea of the newborn (epidemic) | 38. Poliomyelitis, acute anterior |
| 12. Diphtheria | 39. Psittacosis and ornithosis |
| 13. Dog and other animal bites | 40. Rabies |
| 14. Dysentery—bacillary | 41. Rheumatic fever—acute |
| 15. Encephalitis—acute | 42. Ringworm of scalp |
| 16. Erysipelas | 43. Rocky Mountain spotted fever |
| 17. Food infections | 44. Scarlet fever |
| 18. Food poisoning | 45. Smallpox |
| 19. German measles | 46. Syphilis |
| 20. Glanders | 47. Tetanus |
| 21. Gonorrhea | 48. Toxoplasmosis |
| 22. Granuloma inguinal | 49. Trachoma |
| 23. Hemorrhagic jaundice | 50. Trichinosis |
| 24. Infectious hepatitis | 51. Tuberculosis—all forms |
| 25. Impetigo contagioso (in institutions) | 52. Tularemia |
| 26. Influenza | 53. Typhoid fever |
| 27. Keratoconjunctivitis— infectious | 54. Typhus fever |
| | 55. Undulant fever |
| | 56. Vincent's Infections |
| | 57. Whooping cough |
| | 58. Yellow fever |

SCOPE AND PLAN OF INDUSTRIAL HYGIENE SURVEY

Since only three months were available for field work on industrial hygiene problems and two and one half months for the preparation of the report, it was necessary to find a method for obtaining as much information as possible within this limited period of time. Fortunately, the Illinois Department of Public Health had made a comprehensive survey of the industrial hygiene problem in Illinois in 1939, which provided valuable information on the problems as they related to the whole state at that time.

A questionnaire was developed to secure basic information on the number and types of plants, their approximate size, operations having potential health hazards, the number and type of medical personnel and facilities, the scope of plant health and medical services, and the services utilized for the control of special health problems from official and non-official agencies.

The original plan to confine the survey to a sample of manufacturing industries, since they have the greatest potential health problems, and to sample other industrial and service groups to a limited extent only, could not be followed. No accurate, current, and complete mailing list in readily usable form existed which included all manufacturing establishments and excluded all others. The list of 3,189 plants finally used was prepared by combining mailing lists for the Chicago-Cook County area obtained from the Illinois Chamber of Commerce, the Community Fund of Chicago, the Chicago Association of Commerce, and the Division of Industrial Hygiene of the Illinois Department of Public Health. The names in these lists were checked for accuracy in the Red Book, the Buyer's Guide, and the Industrial Directory of Chicago. To avoid inclusion of too many small plants in the survey, those listed in one directory as employing less than 25 persons were omitted.

A questionnaire, accompanied by a personal letter, was sent to each of the 3,189 establishments on the list and all plants which did not reply within three or four weeks were sent a second copy of the questionnaire with a followup form letter. Incomplete questionnaires were returned by 180 firms which had moved or closed, or which carried on production only in areas outside Cook County, leaving a total of 3,009 establishments from which completed replies might be expected. A total of 1,399 completed questionnaires, excluding duplicates, or 46.5 percent of the 3,009, were

returned in time for statistical tabulation, and 19 (0.6 percent) too late for tabulation. These 1,399 questionnaires included 143 completed during personal visits to three representative manufacturing districts, one in Chicago and two elsewhere in Cook County, by industrial hygiene engineers of the Illinois Department of Public Health.

To secure information concerning the industrial hygiene services offered by official and other agencies, conferences were held with personnel of the industrial hygiene divisions of the Illinois Department of Public Health and the Illinois Department of Labor, the Chicago Department of Buildings, the Chicago Health Department, the Cook County Department of Public Health, the Division of Statistics and Research of the Illinois Department of Labor, and the Council of Social Agencies of Chicago. In addition, problems were discussed with several industrial physicians serving on industrial health committees of the Chicago and Illinois medical societies and with representatives of three leading labor unions. All available reports pertaining to the activities of these groups, together with their publications, were reviewed as a source of further information.

ADEQUACY OF SAMPLE

Comparisons were made with the 1939 survey of industrial hygiene in Illinois to determine the adequacy of the sampling of the Chicago and Cook County industrial establishments in relation to the 1939 survey. In that survey, Illinois Department of Public Health surveyors visited 3,358 plants, employing 303,251 workers, or 26.5 percent of all the workers employed in all the industries surveyed, according to the 1930 census. A direct comparison was also made with the 1940 census figures for all industrial employees in Cook County, including Chicago, for the specific industries reporting in the Chicago-Cook County Health Survey. The following tabulation compares the percentage of all workers in the different industries reported in the 1940 census who were represented in the Chicago-Cook County Health Survey with the percentage of the total workers reported in the 1930 census who were represented in the 1939 Illinois survey.¹

The 47.8 percent of employees in all industries according to the 1940 census represented by the Chicago-Cook County Health Survey sample compares favorably with the 26.5 percent of all employees in the 1930 census represented by the 1939 Illinois survey sample. Comparison of the present survey figures with the 1940 census data on industrial workers in the Chicago-Cook County area indicates that reporting industries employed 77 percent of the manufacturing and mechanical employees, 63 percent of those in the extraction of minerals, 56 percent of transportation workers, 13 percent of those in wholesale and retail trades, 6 percent of those in personal services, and 112 percent of those in public utilities. Within the manufacturing and mechanical industry, the ratios vary all the way from 118 percent for iron and steel, 90 percent for nonferrous

¹ Illinois Department of Public Health, *Evaluation of the Industrial Hygiene Problem of Illinois*, Springfield, 1939, p. 14.

| Type of Industry | Percentage of Total Workers Reported in Census | |
|--|---|---------------------------|
| | Chicago-Cook County | 1939 |
| | Health Survey Sample | Illinois Survey Sample |
| All industries surveyed | 47.8 | 26.5 |
| Extraction of minerals | 63.3 | 10.5 |
| Manufacturing and mechanical | 77.3 | 27.6 |
| Chemical and allied | 84.4 | 41.9 |
| Clay, stone, and glass | 31.8 | 44.1 |
| Clothing | 28.0 | 21.6 |
| Food and allied | 54.9 | 26.6 |
| Iron and steel | 118.3 | 21.8 |
| Metal industry (not iron and steel) | 90.1 | 85.4 |
| Leather | 61.5 | 42.3 |
| Lumber and furniture | 29.8 | 36.2 |
| Paper and printing | 53.1 | 25.6 |
| Textiles | 37.4 | 47.3 |
| Miscellaneous Manufacturing | 39.1 | 21.9 |
| Personal service | 6.3 | 19.9 |
| Trade | 12.9 | |
| Transportation | 56.3 | |
| Public utilities | 111.7 | |

metals, and 84 percent for chemicals, down to about 30 percent each for clothing, lumber and furniture, and clay, stone, and glass. In all but a few categories, the sample of the present survey for all Cook County appears to be considerably larger than the sample of the survey of all Illinois in 1939. The 118 percent reported for iron and steel and the 112 percent for public utilities are the result of wartime increases.

Since only half the questionnaires were completed and returned, the present sample of employees in reporting industries may appear to be disproportionately large in comparison with the total number of industrial workers reported in the 1940 census. Several factors are responsible for this situation. One is the rapid war and postwar growth of many industries since 1940 shown by the following comparison of the number of employees in all types of Illinois manufacturing establishments reported in the 1940 census² with the number estimated for May 15, 1946 by the U. S. Bureau of Labor Statistics.³

² U. S. Bureau of the Census, *Characteristics of the Population, Illinois, 1940*, 2d ser., Table 18.

³ Illinois Department of Labor, *The Illinois Labor Bulletin*, July, 1946, p. 2, Table 5.

| Industry | Number of Industrial Workers (In thousands) | |
|------------------------------|--|---------------|
| | 1940 Census | 1946 Estimate |
| All manufacturing industries | 821.5 | 1,074.5 |
| Stone, clay, and glass | 23.2 | 28.6 |
| Iron and steel | 136.4 | 172.7 |
| Transportation equipment | 24.7 | 50.7 |
| Nonferrous metals | 29.8 | 51.2 |
| Electrical machinery | 55.9 | 110.4 |
| Machinery, except electrical | 104.7 | 165.3 |
| Lumber and furniture | 40.6 | 39.1 |
| Food and kindred | 114.0 | 126.5 |
| Textiles | 13.9 | 13.1 |
| Apparel | 48.8 | 54.6 |
| Paper and allied | 21.2 | 24.1 |
| Printing and publishing | 74.2 | 84.7 |
| Chemical and allied | 30.3 | 55.3 |
| Petroleum and coal | 15.5 | 14.8 |
| Leather | 28.4 | 27.9 |
| Other manufacturers | 59.9 | 55.5 |

Comparison of the figures in the tabulation indicates that estimated employment for all manufacturing industries has increased 30.8 percent since 1940 and that in the transportation equipment, electrical machinery, chemical and nonferrous metals industries, it has increased 105, 97, 83, and 72 percent, respectively. Only five groups showed minor decreases—leather, furniture, petroleum, textiles, and miscellaneous manufacturing.

Other factors were the heavy weighting of the mailing list with the larger plants, owing to the selection inherent in the sources of information, and the effort made to omit many of the very small plants with less than twenty-five employees. It was found also that larger plants returned a much larger proportion of inquiries than did the small plants. In addition, twenty-four of the very large plants were included necessarily, because of the personal visits made.

The inadvertent inclusion in the mailing list of a sizable number of retail stores, jobbers, and sales offices also was partly responsible for the fact that about half the questionnaires were not returned. These groups of recipients evidently decided that the questionnaire was not strictly applicable to their businesses. As far as the personnel handling the returned questionnaires could determine, only a few of the prominent industrial establishments failed to reply.

A comparison of the distribution by size of all manufacturing plants which reported to the Chicago-Cook County Health Survey with all the manufacturing plants in Illinois in 1939 is presented in the following tabulation.

| <i>Size of Plants</i> | <i>Number of Plants</i> | |
|-----------------------|--|--|
| | <i>Chicago-Cook County Health Survey</i> | <i>Illinois Census of Manufacturers 1939</i> |
| All manufacturing | 1,217 | 12,980 |
| No wage earners | 0 | 721 |
| 1-5 | 31 | 5,103 |
| 6-20 | 99 | 3,281 |
| 21-50 | 204 | 1,724 |
| 51-100 | 250 | 947 |
| 101-250 | 315 | 742 |
| 251-500 | 143 | 290 |
| 501-1,000 | 99 | 116 |
| 1,001-2,500 | 57 | 44 |
| 2,500 or more | 19 | 12 |

It is obvious from this comparison that all sizable industrial manufacturing plants are well represented in the survey, even allowing for the estimated wartime average expansion of 30.8 percent of employees in the plants represented by the 1939 data. For example, in plants with more than 250 employees where in-plant medical and health services are found customarily, 318 plants reported to the survey, as compared with 462 such plants in the state in 1939. Of plants with more than 500 employees, 175 reported to the survey, as compared with only 172 in the state in 1939. On the other hand, of the very small plants, where in-plant health services are necessarily few, the survey sample was intentionally limited to a number considered adequate to describe the services offered. Of plants with 50 employees or less, the survey included 334, whereas the 1939 state census showed almost 11,000.

All these considerations warrant the belief that the survey sampling of industrial establishments in Chicago and Cook County is adequate to describe industrial health and hygiene services and needs.

METHOD OF STUDY OF PUBLIC HEALTH NURSING SERVICE

No detailed study of public health nursing activities had been made previously in the Chicago-Cook County area. This aspect of the nursing survey is therefore much more comprehensive than that undertaken in either the industrial nursing or hospital nursing fields. In addition to collecting basic information concerning public health nursing activities, time and activity studies were carried on, supplemented by extensive observations of the nurses' work in home, school, and clinic. The specific methods used were as follows:

1. Detailed schedules patterned after those outlined by the National Committee on Community Nursing Service were filled in by every organization employing public health nurses.

2. A time and activity study, which included all nurses, was carried on for a period ranging from two to four weeks, depending upon the size of the agency. All organizations with less than one hundred nurses conducted the study for the full four-week period.

3. Personnel information was obtained for public health nurses employed by all health agencies in the area and for a group of graduate nurses working in the Intensive Treatment Center of the Chicago Health Department.

4. A case-load analysis of all cases was made on prepared forms by each field nurse assigned to a definite district.

5. Observations of the work of nurses employed by 49 of the 51 agencies were made by representatives of the Chicago-Cook County Health Survey in the clinic, office, home, and/or school for the purpose of securing first-hand knowledge of the actual service being rendered to the public.

6. Interviews and conferences were held by the survey staff with health officers, principals of schools and superintendents of boards of education, medical and nursing directors in health agencies, members of governing boards of voluntary agencies, and various interested lay persons and groups in Chicago and other communities in Cook County.

7. Final evaluations of nursing programs in the various fields through a comparison of what is done with what is recommended to meet generally accepted standards of service were made. When making specific applications of such minimum standards, it is not meant to imply that any community meeting such standards has all the nursing service that should be furnished in that community to carry on a safe public health nursing program.

The "Criteria of Good Public Health Nursing Administration and Organization," used throughout the survey in evaluating public health nursing services of the Chicago-Cook County area, are those proposed by a special committee for the whole country.¹ This committee was composed of nursing and medical representatives of national and Federal agencies concerned with public health. These criteria outlined the broad fundamental principles upon which sound and adequate public health nursing on a generalized family basis can be assured. The essential points briefly summarized are as follows:

1. Each public health nurse should combine in her home visits the multiple functions of health teaching, prevention and control of disease, and care of the sick, whether in a given situation she works under the direction of a private physician or of a health officer.

2. One of three patterns of organization should be adopted by the community, selected so as to provide the type of co-ordinated public health nursing service most feasible under local conditions and the one that will best fit into the general plan advocated by the state health department in the specific state: (a.) all public health nursing service, including care of the sick in the home, to be administered and supported by the health department; (b.) preventive services carried on by the health department, with bedside nursing and some special fields to be covered by only one voluntary agency, working in close co-ordination with the health department; (c.) a combination service to be jointly administered and financed by representatives of official and voluntary agencies, with all field service rendered by a single group of public health nurses.

3. All organized community work should be carried out under the leadership of a properly qualified health officer, even though not directly under his administration.

4. Since public health authorities agree that a population of 50,000 is needed to support an adequate program of public health, communities should work toward having public health nursing services as part of a total health organization which would serve at least 50,000 people.

5. A representative citizens' committee for public health nursing or a board of directors is fundamental to the best administration of all public health nursing services.

6. In general, both public and private funds are needed to provide a complete service.

7. One public health nurse should be provided for every 2,000 persons.

8. Adequate provision should be made for public health nursing supervision in the ratio of one supervisor for every ten nurses. Education and training in public health nursing should be extended and strengthened.

9. A well-defined and active program of interpretation is imperative in order to secure understanding of and support for a comprehensive community nursing service.

¹ National Organization for Public Health Nursing (Special Committee), "Desirable Organization of Public Health Nursing for Family Service," *Public Health Nursing*, XXXVIII (August, 1946), 387-89.

It can be seen from the foregoing outline that the extent and adequacy of public health nursing activities in any area is dependent primarily upon three factors: nursing staff, program, and agency organization and administration. Not only must there be a sufficient number of well-trained public health nurses, including supervisors, on the staffs of agencies providing the service, but there must also be sound administration and co-operative program planning on a community-wide basis.

RECOMMENDED QUALIFICATIONS FOR PUBLIC HEALTH NURSING PERSONNEL¹ 1940-1945

I. STAFF NURSES²

A. FOR THE NURSE WORKING ON THE STAFF OF AN OFFICIAL OR PRIVATE AGENCY UNDER THE DIRECT SUPERVISION OF A NURSE SUPERVISOR WHO MEETS THE QUALIFICATIONS HEREIN SET FORTH

Duties: To carry on the direct nursing service of the agency in the home, clinic, conference, school, or industry.

Preparation: 1. General education—High school graduation or its educational equivalent which meets college entrance requirements. Education on a college level is desirable.

2. Basic nursing education—Graduation from an accredited³ school of nursing connected with a hospital having a daily average of 100 patients, with the necessary affiliation, which gives the nurse a broad clinical experience in medical nursing, including acute communicable disease, tuberculosis, and the venereal diseases; psychiatric and pediatric nursing (including the care of children with orthopedic and cardiac conditions); and an understanding of the social and health aspects of nursing, both physical and mental, through an integrated program of instruction in classroom, ward, and outpatient department, with appropriate use of community facilities.

3. State registration.

4. Postgraduate study—Completion of the year's program of study in public health nursing in a university program approved by the National Organization for Public Health Nursing, previous to or within five years after appointment.

B. FOR THE NURSE IN AN OFFICIAL OR PRIVATE AGENCY NOT WORKING UNDER DIRECT SUPERVISION

Duties: In addition to carrying on the direct nursing service of the agency as in A, to assist in organizing the service; to work with lay and

¹ *Public Health Nursing*, XLII (January, 1942), 24-28.

² See recommended qualifications for public health nurses in school and industry, *Public Health Nursing*, February, 1938, p. 108; July, 1939, p. 410. Reprints are available free of charge.

³ Accredited by the state board of nurse examiners.

professional groups; to carry on the activities in special situations such as the school and industry.

Preparation: 1. General education—Same as listed for staff nurse under A.

2. Basic nursing education—Same as listed for staff nurse under A.

3. State registration.

4. Postgraduate study—Completion of the year's program of study in public health nursing in a university program approved by N.O.P.H.N., before appointment.

5. Experience—At least one year's experience under qualified nursing supervision in a public health nursing agency in which family health is emphasized.

II. SUPERVISORS AND EXECUTIVES

A. FOR THE SUPERVISOR

Duties: To supervise the staff nurses in an official or private agency and to assist in their growth and development; to plan and develop the nursing program for which she is responsible in relation to the total program of the agency; to correlate it with that of other agencies in the educational, social, and health fields; to study and evaluate the program within her own area.

Preparation: 1. General education—College degree.

2. Basic nursing education—Same as listed for staff nurse under I. A.

3. State registration.

4. Postgraduate study—Same as listed for staff nurse under I. B., and in addition, a course in principles of supervision.

5. Experience—At least two years' experience, one of which was under direct, qualified nursing supervision in a public health nursing service in which family health is emphasized.

B. FOR THE CONSULTANT

Duties: To assist in analyzing the needs and developing the service in the special field; to correlate this service with other services offered by the agency and with the programs of other agencies; to advise regarding policies, techniques, and procedures in the special field; to participate in the supervisory and staff-education program of the agency in co-operation with the other supervisory personnel.

Preparation: 1. General education—College degree.

2. Basic nursing education—Same as listed for staff nurse under I. A.

3. State registration.

4. Postgraduate study—Same as listed for staff nurse under I. B., and in addition a course in principles of supervision and advanced preparation in the special field, including content in that field, courses in general education, and methods of making and using studies.

5. Experience—At least two years' experience, one of which was under direct, qualified nursing supervision in a public health nursing service

in which family health is emphasized, and at least one year's experience as a generalized supervisor.

C. FOR THE EDUCATIONAL DIRECTOR OR INSTRUCTOR IN PUBLIC HEALTH NURSING

Duties: In public health nursing agencies—to plan and to direct the educational program for the new nurse, for the student, and for the staff as a whole, and to correlate and develop the resources of the agency and of related community services for teaching purposes.

In schools of nursing—to assist in directing, to correlate, and to participate in the efforts to give the undergraduate student the concept of the social and health aspects of nursing, both physical and mental, through an integrated program of instruction in classroom, ward, and outpatient department, with appropriate use of community facilities.

Preparation: 1. General education—College degree.

2. Basic nursing education—Same as listed for staff nurse under I. A.

3. State registration.

4. Postgraduate study—Same as listed for staff nurse under I. B., and in addition, courses in principles of supervision and in the philosophy and principles of education.

5. Experience—At least two years' experience, one of which was under direct, qualified nursing supervision in a public health nursing service in which family health was emphasized and at least one year's experience as a supervisor in a public health nursing service.

D. FOR THE DIRECTOR

Duties: To administer the nursing service of the official or private agency; to determine with the administrative official or the board the policies and program to be followed; to interpret the needs of the nursing service to the administrative officials, to the board, to committees, and to the community; to participate in community planning and action in health and social welfare.

Preparation: 1. General education—College degree.

2. Basic nursing education—Same as listed for staff nurse under I. A.

3. State registration.

4. Postgraduate study—Same as listed for staff nurse under I. B., and in addition, courses in supervision and in principles of administration.

5. Experience—At least three years' experience, preferably in more than one type of agency—i.e., official and private—including experience in supervision.

E. FOR THE DIRECTOR OF A UNIVERSITY PROGRAM OF STUDY

Duties: To assume direct responsibility for the planning and administration of the program.

Preparation: 1. General education—Graduate degree.

2. Basic nursing education—Same as listed for staff nurse under I. A.

3. State registration.

4. Postgraduate study—Completion of the year's postgraduate program of study in public health nursing in one of the university programs approved by the N.O.P.H.N., before appointment, and advanced university courses in general education and in supervision and administration in public health nursing.

5. Experience—A minimum of five years of public health nursing experience, preferably in more than one agency, one year of which should have been in a general public health nursing agency with direct, qualified supervision, emphasizing family health. This experience should include experience as a staff nurse and experience as a supervisor, executive, or educational director.

METHODS AND TECHNIQUES USED IN DENTAL SURVEY OF SCHOOL CHILDREN

PRINCIPLES ON WHICH DENTAL SURVEY METHOD IS BASED

The present survey is based on methods which have been established in previous studies designed to measure the dental health status of a population group.¹ The quantitative measure of dental caries experience in a given population is expressed in a simple arithmetic ratio, namely, the percentage of children who show evidence of past or present dental caries. The dental caries experience, in terms of the total number of decayed, missing, or filled teeth per unit of population, serves as a rate of dental caries prevalence. For brevity, the caries experience will be designated hereafter as D.M.F.

It has been established also that there is a direct relationship² between the percentage of children by age with one or more D.M.F. permanent teeth and the average number of D.M.F. permanent teeth per child.³ This relationship provides the basis for a simple and rapid method of estimating the total caries experience of selected population groups.

Evaluation of dental care in a given community may be based on the proportion of children with one or more fillings in the permanent or deciduous teeth⁴ and on the number of permanent teeth missing or indicated for extraction, in relation to the caries prevalence rates for children of that community. It is not possible, however, to estimate the total amount of dental care, in terms of fillings, on the basis of the percentage of children found to have one or more fillings present.

¹ Henry Klein, C. E. Palmer, and J. W. Knutson, "Studies on Dental Caries: I. Dental Status and Dental Needs of Elementary School Children," *Public Health Reports*, LIII (May 13, 1938), 751-65; J. W. Knutson and Henry Klein, "Studies on Dental Caries: IV. Tooth Mortality in Elementary School Children," *Public Health Reports*, LIII (June 24, 1938), 1021-32. J. W. Knutson, "Evaluating Dental Health Programs," *Public Health Reports*, LVII (August 28, 1942), 1287-1306. J. N. Wisan, "Evaluation of Dental Programs for Children," *American Journal of Public Health*, XXVIII (July, 1938), 859-62. J. W. Knutson, "Appraising the Dental Health Program," *Journal of the American Dental Association*, XXIX (April, 1942), 543-56. J. W. Knutson, Cecelia Maday, and W. A. Jordon, "Simplified Appraisal of Dental-Health Programs," *Public Health Reports*, LXII (March 21, 1947), 413-22.

² Explanation of Formula: $97 - y = 97 (0.524)^x$.

³ J. W. Knutson, "An index of the Prevalence of Dental Caries in School Children," *Public Health Reports*, LIX (Feb. 25, 1944), 253-63.

⁴ J. W. Knutson, "Evaluating Dental Health Programs," *Public Health Reports*, LVII (August 26, 1942), 1287-1306.

From the results of numerous surveys in which detailed methods were used for determining the dental status of each child, it had been shown that among large survey groups there is very close association between the percentage of children with at least one carious permanent tooth by age and the average number of carious permanent teeth per child by age.

Because of this close association, it is possible to estimate either one of these factors by obtaining the other. Since in this case the percentage of children with at least one carious tooth is much more readily obtained than the other factor, it is used in this survey to obtain an estimate of caries experience.

EXAMINATION FORM AND TECHNIQUE

The data necessary to determine the prevalence of dental caries, the percentage of children showing evidence of dental care in the permanent and deciduous teeth, and the tooth mortality rates per one hundred children, among the school children of Chicago and Cook County, were obtained by means of tongue blade inspections of a representative sample of school children, selected as described in Chapter 37. The examinations were made by two teams of examiners, each team consisting of a dentist to make the examinations and a clerk to record the findings. Each team averaged at least five hundred inspections per day, or a total of one thousand children inspected each day by the two teams. All the children were examined in the schools under the conditions that usually prevail in the average classroom. All examinations were made under good lighting conditions, and natural light was utilized whenever possible.

The first observation made on the teeth of each child was to determine the presence or absence of one or more decayed, filled, or missing permanent teeth. If the child was found to have any one of these three indications of caries experience or any combination thereof, he received a plus rating in the D.M.F. column of the dental survey record form. If no D.M.F. teeth were found, the child received a naught rating in this column.

The second observation made was the presence or absence of filled permanent teeth. If the child had one or more filled permanent teeth, a plus rating was recorded, indicating that there was evidence of previous dental care. If no fillings were found in the permanent teeth, a naught rating was recorded.

For deciduous teeth, similar ratings were recorded. A plus sign indicated the presence of one or more filled deciduous teeth, a minus sign indicated dental caries in one or several of the teeth, but no dental care in the form of fillings. The naught symbol was recorded for a sound set of deciduous teeth, with no evidence of dental caries experience. Missing deciduous teeth were not considered as having had dental caries, since it is difficult to determine whether a deciduous tooth has been lost due to dental caries or is missing as a result of natural processes.

All permanent teeth indicated for extraction were identified and recorded specifically by quadrant and tooth number. The teeth already missing were noted in a similar manner. Qualifying remarks, such as "tooth extracted for orthodontic purposes," "tooth lost from trauma," and other explanatory comments were also indicated on the record form.

QUALIFICATIONS AS TO EDUCATION AND EXPERIENCE OF ENGINEER AND OTHER SANITATION PERSONNEL IN A MODERN- IZED DEPARTMENT OF HEALTH

GENERAL

Although inflexible requirements regarding the qualifications of engineering personnel in public health work may be undesirable, certain standards are useful as a guide in recruiting personnel, establishing responsibility, and developing salary scales. The standards presented should not be applied so rigidly as to preclude employment of personnel who may not fulfill each item of qualification, but whose services are satisfactory.

PROFESSIONAL ENGINEER

EDUCATIONAL REQUIREMENTS The minimum educational requirements for engineers employed in a public health department are (1) graduation in engineering from a college or a university recognized by the Engineering Council for Professional Development which provides undergraduate instruction in sanitary engineering.

Public health engineers in grades above that of junior engineer should have, in addition to the foregoing, at least one school year of graduate study in a recognized school of public health. Three years of satisfactory experience may be substituted for the year of graduate study.

EXPERIENCE REQUIREMENTS No previous experience will be required of engineers entering upon employment in the junior grade. In general, they will be ineligible for promotion until they have completed one year of graduate study in engineering or public health or have had three years of satisfactory experience.

Engineers entering the service in grades above that of junior should have had the basic education required for the junior grade and, in addition, the same amount of graduate study and of satisfactory experience for promotion to a higher grade which would be required of the junior engineer.

SECTION CHIEFS Section chiefs, in general, should meet the educational requirements set forth for professional engineers and, in addition, have a minimum of three years of acceptable experience in public health engineering.

DIVISION CHIEFS Division chiefs should have all the educational qualifications of a section chief and a minimum of five years experience in public health engineering.

BUREAU CHIEF Bureau chiefs should possess the educational qualifications of the section chief and in addition should have had at least seven years of public health engineering experience; a minimum of two years of this experience should have been as responsible administrator in charge of important public health or related engineering work.

DEPUTY DIRECTOR IN CHARGE OF ALL SANITATION SERVICES The deputy director should have the educational qualifications of a section chief and, in addition, ten years of experience in public health engineering; for at least five years of this time he should have been in responsible charge of important public health or related engineering work.

PROFESSIONAL PERSONNEL OTHER THAN ENGINEERS

In addition to engineers, graduates from approved schools of veterinary medicine or dairy husbandry should be considered to possess the necessary educational qualifications to direct milk and food control programs. In addition, they should have had one year of graduate study in public health and six years of experience in public health work.

NONPROFESSIONAL PERSONNEL

SANITARIANS Candidates in this classification should present evidence of graduation from high school at least. Normally, one or more years of college work should be expected as a minimum. No technical standards are established as yet for sanitarians, but the trend among those engaged in this type of work is strongly toward college training. As a means to that end, some of the better schools of public health have established courses designed to meet the demand; a considerable number of sanitarians already have availed themselves of this training. Generally speaking, sanitarians have developed into a professional group, in the sense of a career group with some technical training, but on account of the circumscribed and narrow limits of training they probably should be rated as subprofessional, rather than professional, personnel.

LIST OF HOSPITALS REPLYING TO ONE OR MORE QUESTIONNAIRES¹

| | NUMBER OF QUESTIONNAIRES RETURNED | | | |
|----------------------------------|-----------------------------------|--------|--------|--------|
| | Form A | Form B | Form C | Form D |
| GENERAL HOSPITALS | 44 | 48 | 49 | 51 |
| Nonprofit | 22 | 25 | 25 | 26 |
| Albert Merritt Billings Hospital | 1 | 1 | 1 | 1 |
| American Hospital | 1 | 1 | 1 | 1 |
| Belmont Community Hospital | .. | 1 | 1 | 1 |
| Chicago Memorial Hospital | 1 | .. | .. | 1 |
| Edgewater Hospital | .. | 1 | 1 | 1 |
| Englewood Hospital | 1 | 1 | 1 | 1 |
| Garfield Park Hospital | 1 | 1 | 1 | 1 |
| Grant Hospital | 1 | 1 | 1 | 1 |
| Henrotin Hospital | 1 | 1 | 1 | 1 |
| Illinois Masonic Hospital | .. | 1 | 1 | 1 |
| Michael Reese Hospital | 1 | 1 | 1 | 1 |
| Mount Sinai Hospital | 1 | 1 | 1 | 1 |
| Norwegian American Hospital | .. | 1 | 1 | 1 |
| Passavant Memorial Hospital | 1 | 1 | 1 | 1 |
| Provident Hospital | 1 | 1 | 1 | 1 |
| Ravenswood Hospital | 1 | 1 | 1 | 1 |
| Roseland Community Hospital | 1 | 1 | 1 | 1 |
| South Chicago Community Hospital | 1 | 1 | 1 | 1 |
| Southtown Hospital | 1 | 1 | 1 | 1 |
| Saint Luke's Hospital | 1 | 1 | 1 | 1 |
| University Hospital | 1 | 1 | 1 | 1 |
| Women and Children's Hospital | 1 | 1 | 1 | 1 |
| Evanston Community Hospital | 1 | 1 | 1 | 1 |
| Evanston Hospital | 1 | 1 | 1 | 1 |
| McNeal Memorial Hospital | 1 | 1 | 1 | 1 |
| West Suburban Hospital | 1 | 1 | 1 | 1 |
| Church | 18 | 19 | 20 | 21 |
| Alexian Brothers' Hospital | 1 | 1 | 1 | 1 |
| Augustana Hospital | 1 | .. | 1 | 1 |
| Bethany Sanitarium and Hospital | 1 | 1 | 1 | 1 |
| Columbus Hospital | 1 | 1 | 1 | 1 |
| Evangelical Hospital | 1 | 1 | 1 | 1 |

¹ Type of service is that given in "Hospital Service in the United States," *Journal of the American Medical Association*, CXXX (April 20, 1946), 1,102-1,104.

GENERAL HOSPITALS

NUMBER OF QUESTIONNAIRES RETURNED

Church (Continued)

| | Form A | Form B | Form C | Form D |
|--|--------|--------|--------|--------|
| Hospital of St. Anthony de Padua | 1 | 1 | 1 | 1 |
| Loretto Hospital | 1 | 1 | 1 | 1 |
| Lutheran Deaconess Hospital | .. | 1 | 1 | 1 |
| Mercy Hospital | 1 | 1 | 1 | 1 |
| Mother Cabrini Hospital | 1 | 1 | 1 | 1 |
| Presbyterian Hospital | 1 | 1 | 1 | 1 |
| Saint Anne's Hospital | 1 | 1 | 1 | 1 |
| Saint Bernard's Hospital | 1 | 1 | 1 | 1 |
| Saint Elizabeth Hospital | 1 | 1 | 1 | 1 |
| Saint George Hospital | 1 | 1 | 1 | 1 |
| Saint Joseph Hospital | 1 | 1 | 1 | 1 |
| Swedish Covenant Hospital | 1 | 1 | 1 | 1 |
| Wesley Memorial Hospital | 1 | .. | .. | 1 |
| Little Company of Mary Hospital | 1 | 1 | 1 | 1 |
| Saint Francis Hospital | .. | 1 | 1 | 1 |
| Saint James Hospital | 1 | 1 | 1 | 1 |
| Proprietary | 2 | 2 | 2 | 2 |
| Franklin Boulevard Hospital | 1 | 1 | 1 | 1 |
| Jackson Park Hospital | 1 | 1 | 1 | 1 |
| Government | 2 | 2 | 2 | 2 |
| Cook County Hospital | 1 | 1 | 1 | 1 |
| Research and Educational Hospitals | 1 | 1 | 1 | 1 |
| SPECIAL HOSPITALS | 14 | 12 | 12 | .. |
| Childrens | 3 | 1 | 1 | .. |
| Bobs Robert Memorial Hospital for Children | 1 | .. | .. | .. |
| Children's Memorial Hospital | 1 | 1 | 1 | .. |
| La Rabida Sanitarium | 1 | .. | .. | .. |
| Maternity | 4 | 4 | 4 | .. |
| Chicago Lying-in Hospital | 1 | 1 | 1 | .. |
| Frank Cuneo Hospital | 1 | 1 | 1 | .. |
| Misericordia Hospital | 1 | 1 | 1 | .. |
| Salvation Army Hospital | 1 | 1 | 1 | .. |
| Nervous and Mental | 2 | 2 | 2 | .. |
| Illinois Neuropsychiatric Hospital | 1 | 1 | 1 | .. |
| Forest Sanitarium | 1 | 1 | 1 | .. |
| Miscellaneous | 5 | 5 | 5 | .. |
| Chicago Eye, Ear, Nose and Throat Hospital | .. | 1 | 1 | .. |
| Chicago Home for Incurables | 1 | 1 | 1 | .. |
| Illinois Eye and Ear Infirmary | 1 | 1 | 1 | .. |
| Municipal Contagious Disease Hospital | 1 | 1 | 1 | .. |
| Municipal Tuberculosis Sanitarium | 1 | .. | .. | .. |
| Cook County Infirmary at Oak Forest | 1 | 1 | 1 | .. |

| NOT REGISTERED BY THE AMERICAN | NUMBER OF QUESTIONNAIRES RETURNED | | | |
|--------------------------------|-----------------------------------|---------------|---------------|---------------|
| | <i>Form A</i> | <i>Form B</i> | <i>Form C</i> | <i>Form D</i> |
| MEDICAL ASSOCIATION | 3 | 2 | 2 | .. |
| Chicago Hospital | 1 | 1 | 1 | .. |
| Chicago Osteopathic Hospital | 1 | 1 | 1 | .. |
| Douglas Park Hospital | 1 | .. | .. | .. |
| Grand totals | 61 | 62 | 63 | 66 |

LIST OF HOSPITALS WITH SCHOOLS OF NURSING REPLYING TO AT LEAST ONE QUESTIONNAIRE

Alexian Brothers' Hospital
American Hospital
Augustana Hospital
Columbus Hospital
Cook County Hospital

Englewood Hospital
Evanston Hospital
Franklin Boulevard Hospital
Garfield Park Hospital

Grant Hospital
Henrotin Hospital
Hospital of St. Anthony de Padua
Jackson Park Hospital

Little Company of Mary Hospital
Mercy Hospital
Michael Reese Hospital
Mother Cabrini Hospital

Mount Sinai Hospital
Presbyterian Hospital
Provident Hospital

Ravenswood Hospital
Roseland Community Hospital
Saint Anne's Hospital
Saint Bernard's Hospital
Saint Elizabeth's Hospital

Saint Joseph Hospital
Saint Luke's Hospital
South Chicago Community Hospital

Swedish Covenant Hospital

University Hospital

Wesley Memorial Hospital

West Suburban Hospital

Women and Children's Hospital

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